Lloyd T. Keefe

TECHNICAL REPORT No. 55-5

Oregon State Highway Department

R. H. BALDOCK, *State Highway Engineer*
W. C. WILLIAMS, *Deputy State Highway Engineer*

FREEWAY AND EXPRESSWAY SYSTEM PORTLAND METROPOLITAN AREA 1955

TRAFFIC ENGINEERING DIVISION
PLANNING SURVEY SECTION

Survey Conducted In Cooperation With The
U. S. Department of Commerce
Bureau of Public Roads

Published by
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PORTLAND WESTSIDE CENTRAL BUSINESS DISTRICT

FORM E-123 RDH REVISED 2-52

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R. H. BALDOCK
STATE HIGHWAY ENGINEER
W. C. WILLIAMS
1ST ASST. STATE HWY. ENGR.
W. W. STIFFLER
2ND ASST. STATE HWY. ENGR.
C. W. ENFIELD
CHIEF COUNSEL

June 30, 1955

Oregon State Highway Commission

Gentlemen:

The report submitted herewith constitutes a study of the need for arterial highways in the Portland Metropolitan Area based on forecasts of traffic 20 years hence. Before the end of the 20-year period, or 1975, certain freeways, expressways, and major streets should be completed in order to provide adequate transportation facilities for the Portland Metropolitan Area. Failure to accomplish this will retard the economic growth of the area to a major degree.

The total cost of an adequate system is estimated to be about $371 million. Since the estimates were made by rough reconnaissance methods let us assume the cost to be roughly $400 million. This does not include the cost of the secondary street system necessary to serve the new areas developed in the 20-year period, but it does include the cost of the major arterial highway system in the area. Approximately $275 million represents the cost of the proposed 96 miles of Freeways; $53 million represents the cost of the proposed 74 miles of Expressways; and $43 million represents the cost of the 120 miles of Major Streets.

No attempt has been made to show in detail the responsibilities of the State Highway Commission, the City of Portland, and Multnomah, Clackamas, and Washington Counties. It is my personal opinion that, based upon equity, the State Highway Commission should eventually assume approximately 75 per cent of the cost, meeting this part of the cost in part with federal-aid funds and in part with state funds. If the Congress passes a major road bill such as is now under consideration, the Government will contribute about 50 per cent of the total cost of the entire program in the 20-year period. There has been no attempt made to show priorities of projects. Provision has been made for financing in the immediate future about 10 per cent of the total.

It should be realized that the report is only a preliminary one. A great deal of time and money will of necessity need be expended in working out all the details for the major projects tentatively outlined in this report. There has not been time to fully check the proposed projects with the city and county authorities, and there may be proposed public and private improvements which will conflict with the plans as outlined, making necessary some modification.

Constructive criticism toward an objective of developing a free-flowing system of traffic arterials in this area will be appreciated. It is hoped that during the next year this preliminary plan can be reviewed by all parties, and perhaps a plan closer to the final objectives formulated.

It is, I think, quite appropriate that steps be taken now by the State Highway Commission, the City of Portland, and the Counties in the Portland Metropolitan Area to agree upon a basic highway plan, for the reason that there appears to be in the immediate offing a substantial federal program for the building of better highways with which the plan could be coordinated with advantage to all. Some of the most serious bottlenecks in the highway network of the nation are in the great metropolitan areas such as the Portland area, and an early attempt should be made toward agreement upon an over-all plan to effectuate the objective of providing a system of Freeways, Expressways and Major Streets so necessary to service an expanding economy.

Very truly yours,

R. H. Baldock

R. H. Baldock
State Highway Engineer

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INTRODUCTION

THE CITY OF PORTLAND AND ENVIRONS, AS A RESULT OF INDUSTRIAL AND AGRICULTURAL ACTIVITIES FOR WHICH IT SERVES AS A FOCUS, HAS EXPERIENCED A RAPID GROWTH DURING THE PAST TWO DECADES. AS A CONSEQUENCE VEHICULAR TRAFFIC DEMAND HAS INCREASED AT A CONSIDERABLY FASTER RATE THAN HAS STREET AND THOROUGHFARE CAPACITY. THIS IS TRUE AS REGARDS BOTH MOBILE AND TERMINAL FACILITIES. AS A RESULT OF THIS EVER INCREASING DISPARITY BETWEEN "SUPPLY AND DEMAND" THE MAJORITY OF THE STREETS HAVE UNDERGONE A CHANGE IN FUNCTIONAL PATTERN WHICH HAS LEFT MANY OF THEM INADEQUATE TO MEET THE BURDEN IMPOSED. LARGE GROUPS OF VEHICLES MOVING BETWEEN CERTAIN TERMINI FIND IT ADVANTAGEOUS TO DETOUR IN ORDER TO AVOID CONGESTION, RATHER THAN TO FOLLOW MORE DIRECT LINES OF TRAVEL.

PURPOSE OF STUDY

THE HIGHWAY ENGINEER IN THE PROPER AND INTELLIGENT DISCHARGE OF HIS FUNCTION MUST PROMULGATE A TRANSPORT SYSTEM WHICH WILL ADEQUATELY SERVE EXISTING AS WELL AS ANTICIPATED FUTURE DEMANDS OF VEHICULAR TRAFFIC. AS A PREREQUISITE TO SUCH PLANNING, BASIC INFORMATION MUST BE OBTAINED WITH RESPECT TO THE VOLUME, COMPOSITION, AND TRIP TERMINI OF TRAFFIC. THOSE DATA WERE OBTAINED IN 1946 AND ARE DOCUMENTED IN TECHNICAL REPORT NO. 49-2, "1946 - PORTLAND METROPOLITAN AREA TRAFFIC SURVEY - ORIGIN-DESTINATION STUDY."

THE DEVELOPMENT OF A MASTER PLAN OF FREEWAYS AND EXPRESSWAYS THAT WILL ACCOMMODATE NOT ONLY THE DESIRES OF EXISTING 1955 TRAFFIC, BUT ALSO THE DEMANDS OF FUTURE TRAFFIC THAT CAN BE EXPECTED IN 1975, IS THE PURPOSE OF THE PRESENT REPORT. IN 1944 THE STATE HIGHWAY DEPARTMENT PREPARED, IN COOPERATION WITH THE CITY OF PORTLAND, A PLAN OF MAJOR STREETS AND HIGHWAYS. FROM THIS 1944 STUDY, PLANS FOR THE T. H. BANFIELD FREEWAY, THE SOUTHWEST PORTLAND FREEWAY, THE SOUTHEAST PORTLAND FREEWAY, A DEPRESSED FREEWAY BETWEEN CLAY AND MARKET STREETS LEADING TO CANYON ROAD AND THE OREGON COAST, THE 14TH AVENUE VIADUCT AND THE FREMONT STREET BRIDGE, THE N. W. FRONT AVENUE VIADUCT, AND BOULEVARDS ON 39TH AVENUE, 82ND AVENUE AND OTHER COMPARABLE ROUTES WERE DEVELOPED. THESE ROUTES WERE RE-EXAMINED IN 1949 IN LIGHT OF THE 1946 SURVEY AND WERE FOUND TO BE STILL ESSENTIALLY ADEQUATE.

IT NOW APPEARS ADVISABLE, IN VIEW OF PRESENT DAY DESIGN STANDARDS AND THE EVOLUTION OF THE FREEWAY COUPLED WITH AN AMAZINGLY RAPID GROWTH IN TRAFFIC AND THE FORMATION OF THE INTERSTATE SYSTEM OF HIGHWAYS, TO ONCE AGAIN EXAMINE PRIOR PLANS AND TO EVALUATE THEIR ADEQUACY. THIS REPORT ALSO FORECASTS THE NEEDS AND RECOMMENDS ADDITIONAL LINEAL FACILITIES TO CARE FOR ANTICIPATED 1975 TRAFFIC DEMANDS.

THIS REPORT, AS MENTIONED HEREINBEFORE, WILL BRIEFLY REVIEW SOME OF THE SALIENT FEATURES DEVELOPED IN THE 1946 PORTLAND-METROPOLITAN AREA ORIGIN-DESTINATION STUDY AND AT THE SAME TIME WILL RE-EVALUATE 1955 AND 1975 AVERAGE DAILY TRAFFIC VOLUMES, AS NOW EXIST AND AS CAN BE EXPECTED TO EXIST WERE A MASTER PLAN OF FREEWAYS AND EXPRESSWAYS TO BE DEVELOPED FOR THE CITY OF PORTLAND AND VICINITY. THIS PARTICULAR STUDY ENCOMPASSES A LARGER AREA THAN WAS CONSIDERED IN THE ORIGINAL 1946 PORTLAND STUDY, BUT THAT STUDY CAN BE AUGMENTED WITH PRESENT-DAY TRAFFIC VOLUMES COUPLED WITH ACCUMULATED INFORMATION SO AS TO BE ADEQUATE FOR THE PURPOSES OF PLANNING.

THIS REPORT WILL DEVELOP ONLY THREE LEVELS OF FACILITIES (THE FREEWAY, THE EXPRESSWAY, AND THE MAJOR STREET) AND WILL NOT TREAT WITH THOSE STREETS AND HIGHWAYS WHICH TEND TO RELEGATE THEMSELVES INTO THE CATEGORY OF LOCAL USE OR THAT WOULD REQUIRE DEVELOPMENT TO A LESSER STANDARD. THE DEFINITIONS AS NOW APPROVED

FOR A FREEWAY, EXPRESSWAY AND MAJOR STREET BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS APPEAR LATER IN THIS REPORT. SUFFICE IT TO SAY THAT THE BANFIELD EXPRESSWAY AND THE PORTLAND-SALEM EXPRESSWAY ARE ACTUALLY FREEWAYS IN ACCORD WITH THIS DEFINITION AND WILL BE SO CALLED THROUGHOUT THIS REPORT. THIS PROGRAM DOES NOT, NOR DOES THIS REPORT, TREAT WITH THE RESPONSIBILITIES FOR FINANCING BY THE SEVERAL GOVERNMENTAL AGENCIES THAT WOULD BE INVOLVED IN THE OVER-ALL PROGRAM. NEITHER DOES THIS REPORT TREAT WITH TERMINAL FACILITIES THAT WOULD BE NECESSARY TO CARE FOR PARKING DEMAND OR DESIRABLE ADJUSTMENTS IN MASS TRANSIT FACILITIES THAT WOULD LOGICALLY RESULT FROM ADOPTION OF THE RECOMMENDATIONS OF THIS REPORT.

A PREREQUISITE TO THE PLANNING AND SUCCESSFUL EXECUTION OF ANY STUDY DEALING WITH TRAVEL BEHAVIOR IS A REVIEW OF THOSE FACTORS WHICH BEAR ON THE ESTABLISHMENT OF TRAVEL PATTERNS. THESE FACTORS INCLUDE SUCH ITEMS AS CULTURE, POPULATION, AND TOPOGRAPHY. THE IMPORTANCE OF THESE FEATURES IS PARTICULARLY ACCENTUATED IN DEALING WITH URBAN AS COMPARED WITH RURAL MOVEMENT, DUE TO THE COMPARATIVELY LIMITED TRIP LENGTHS INVOLVED. ACCORDINGLY, A RESTATEMENT OF THESE INFLUENCING FACTORS IS CONSIDERED DESIRABLE.

ECONOMIC BASE

PORTLAND IS THE COMMERCIAL, INDUSTRIAL, AND FINANCIAL CENTER OF OREGON AND THE COLUMBIA RIVER BASIN. FIGURE 1 SHOWS THE LOCATION OF OREGON AND PORTLAND RELATIVE TO THE ELEVEN WESTERN STATES. POPULATION WITHIN THE CITY LIMITS TOTALED 373,628 IN 1950 AND IS EXPECTED TO REACH 400,000 DURING 1955.

PORTLAND PROPER IS DIVIDED INTO TWO GEOGRAPHICAL AREAS BY THE WILLAMETTE RIVER, THE EAST SIDE HAVING SEVEN-EIGHTHS OF THE AREA AND THE POPULATION. THIS DIVISION RESULTS IN LARGE PART FROM THE FACT THAT THE WEST SIDE IS LIMITED BY BORDERING HILLS, WHILE THE EAST SIDE IS GENERALLY A LEVEL PLAIN. BORDERING THE CITY OF

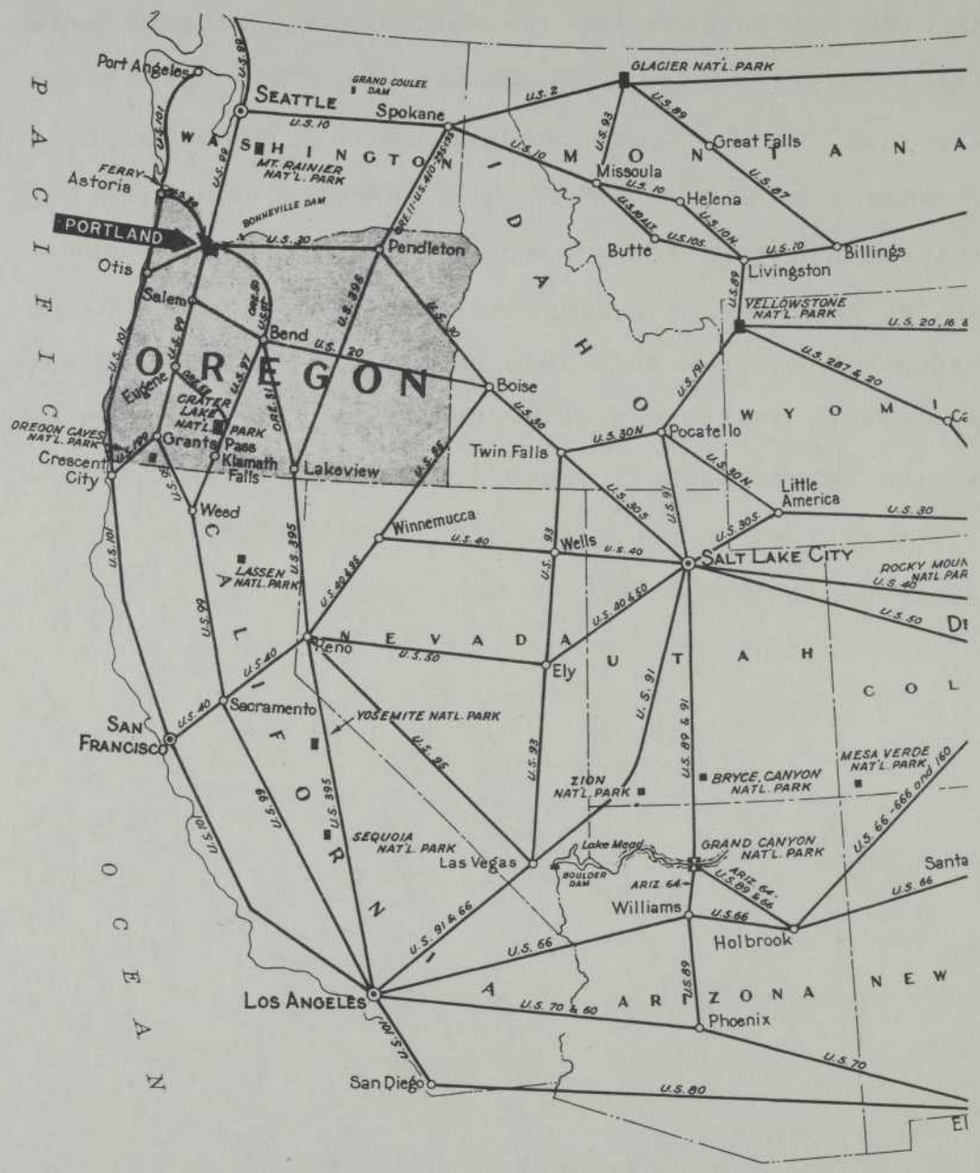


Figure 1—Relation of Oregon and Portland to Eleven Western States

PORTLAND ARE MANY IMPORTANT SUBURBAN AREAS. TO THE WEST AND SOUTHWEST LIES THE TUALATIN VALLEY--A RICH AGRICULTURAL AREA WHICH IS RAPIDLY DEVELOPING INTO A SUBURBAN AREA. TO THE EAST AND SOUTH OF PORTLAND LIES A NEARLY LEVEL AREA WHICH IS ALSO EXPERIENCING A RAPID GROWTH AS A RESIDENTIAL AREA.

WHILE THE ECONOMY OF THE CITY IS WELL DIVERSIFIED, MUCH OF ITS GROWTH CAN BE TRACED TO ITS LOCATION AT THE CONFLUENCE OF THE COLUMBIA AND WILLAMETTE RIVERS. THIS LOCATION CAUSED THE CITY TO DEVELOP BOTH AS A SHIPPING POINT FOR FOREIGN COMMERCE AND AS AN IMPORTANT TERMINUS FOR BARGE TRAFFIC ON THE INLAND WATERWAYS. THUS, FORTLAND EXEMPLIFIES THE PRINCIPLE OF URBAN LOCATION THAT POPULATION AND WEALTH COLLECT WHEREVER THERE IS A BREAK IN TRANSPORTATION.

RAW MATERIALS AND FARM PRODUCTS PRODUCED THROUGHOUT THE PACIFIC NORTHWEST ARE TRANSPORTED TO THE PORTLAND AREA BY HIGHWAYS, RAILROADS, AND WATERWAYS FOR MANUFACTURE AND PROCESSING. LUMBER AND FOOD PROCESSING ARE THE TWO MAJOR INDUSTRIES, BUT PAPER, PRIMARY PRODUCTION AND FABRICATION OF METALS, AND THE MANUFACTURE OF MACHINERY, TEXTILES, APPAREL AND FURNITURE ARE ALSO IMPORTANT. IT IS CURRENTLY ESTIMATED THAT THERE ARE 1,400 MANUFACTURING PLANTS EMPLOYING 60,000 WORKERS IN THE PORTLAND METROPOLITAN AREA (MULTNOMAH, CLACKAMAS, WASHINGTON COUNTIES IN OREGON, AND CLARK COUNTY IN WASHINGTON).

TABLE 1 POINTS OUT THE RELATIVE IMPORTANCE OF INDUSTRY IN THE FOLLOWING THREE AREAS:

1. PORTLAND METROPOLITAN AREA, WHICH INCLUDES CLARK COUNTY IN WASHINGTON
2. OREGON
3. SEATTLE METROPOLITAN AREA IN WASHINGTON

THE VALUE CREATED BY THE PROCESS OF MANUFACTURING, WAS 18 PER CENT HIGHER IN THE PORTLAND METROPOLITAN AREA THAN IN THE SEATTLE METROPOLITAN AREA. OVER 40 PER CENT OF THE TOTAL NUMBER OF MANUFACTURING EMPLOYEES IN OREGON WORKED AT PLANTS IN THE OREGON PORTION OF THE PORTLAND METROPOLITAN AREA IN 1947.

TABLE I

SELECTED MANUFACTURING DATA FOR THE PORTLAND AND SEATTLE METROPOLITAN AREAS, AND THE STATE OF OREGON

1947

TYPE OF ESTABLISHMENT	NUMBER OF ESTAB.	AVERAGE NO. OF EMPLOYEES	VALUE ADDED BY MFR. 1/
ALL ESTABLISHMENTS			
PORTLAND METROPOLITAN AREA	1,297	51,643	$314,273,000
STATE OF OREGON	3,075	105,591	675,017,000
SEATTLE METROPOLITAN AREA	1,221	54,770	265,422,000
ESTABLISHMENTS BY TYPE PORTLAND METROPOLITAN AREA			
LUMBER AND WOOD PRODUCTS	255	9,101	58,611,000
FOOD AND KINDRED	229	8,658	52,790,000
PAPER & PAPER PRODUCTS	26	4,936	41,273,000
PRIMARY METAL	43	4,037	30,396,000
FABRICATED METAL	103	3,691	19,783,000
PRINTING AND PUBLISHING	178	3,387	18,593,000
MACHINERY	98	3,367	17,053,000
TEXTILE PRODUCTS	14	2,905	12,456,000
FURNITURE AND FIXTURES	52	2,853	14,093,000
TRANSPORTATION EQUIPMENT	32	2,641	12,901,000
ALL OTHERS	267	6,067	36,324,000

1/ VALUE ADDED BY MANUFACTURE IS CALCULATED BY SUBTRACTING COST OF MATERIAL, SUPPLIES AND CONTAINERS, FUEL, PURCHASED ELECTRIC ENERGY AND CONTRACT WORK FROM TOTAL VALUE OF SHIPMENTS. IT APPROXIMATES THE VALUE CREATED IN THE PROCESS OF MANUFACTURING.

SOURCE: CENSUS OF MANUFACTURERS, 1947, BUREAU OF THE CENSUS.

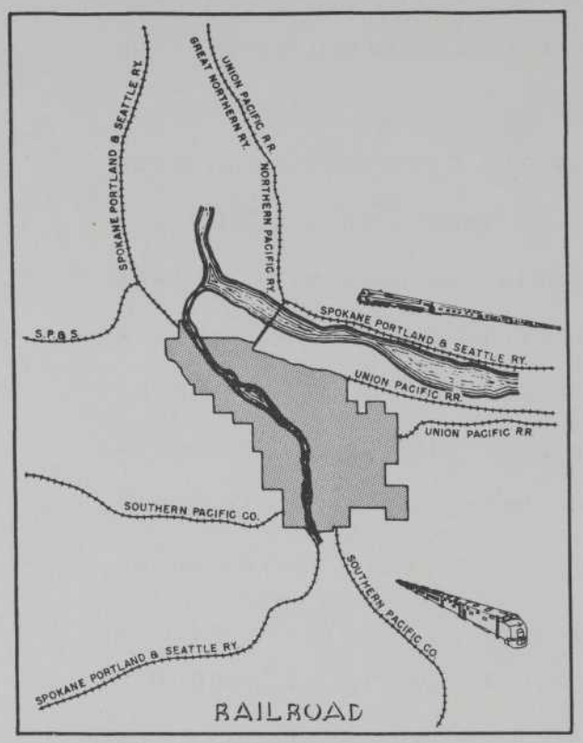
AS A RESULT OF THE LOCAL PRODUCTION, THE PRESENCE OF A DEEP WATER PORT, AND ITS POSITION AS THE CENTER OF AN EXTENSIVE LOCAL MARKETING AREA, PORTLAND HAS BECOME AN IMPORTANT WHOLESALING CENTER. IN 1948, THE 1,376 WHOLESALE ESTABLISHMENTS IN THE METROPOLITAN AREA HAD SALES EXCEEDING $1,400,000,000. THE 7,400 RETAIL ESTABLISHMENTS IN THE METROPOLITAN AREA SOLD GOODS VALUED AT OVER $772,000,000 IN 1948. PORTLAND SERVES AS THE MAJOR WHOLESALING AND TRADING CENTER FOR MOST OF OREGON AND THE COLUMBIA RIVER BASIN.

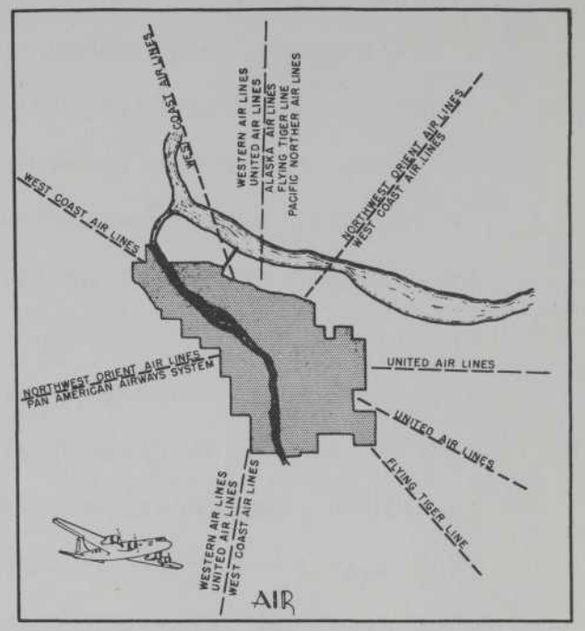
TRANSPORTATION BASE

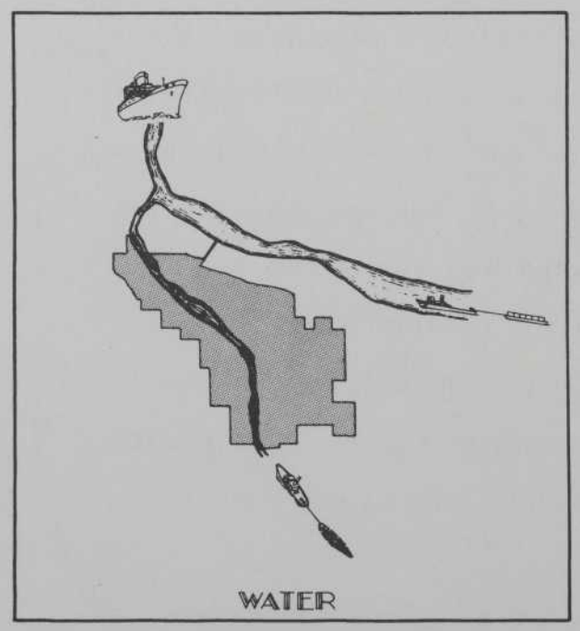
TO MOVE THE RAW MATERIALS INTO PORTLAND FOR PROCESSING, FINISHED GOODS TO THEIR MARKETS, AND PEOPLE INTO AND OUT OF THE AREA, AN EXTENSIVE TRANSPORTATION SYSTEM HAS DEVELOPED. THIS TRANSPORTATION SYSTEM IS ILLUSTRATED PICTORIALLY IN FIGURE 2.

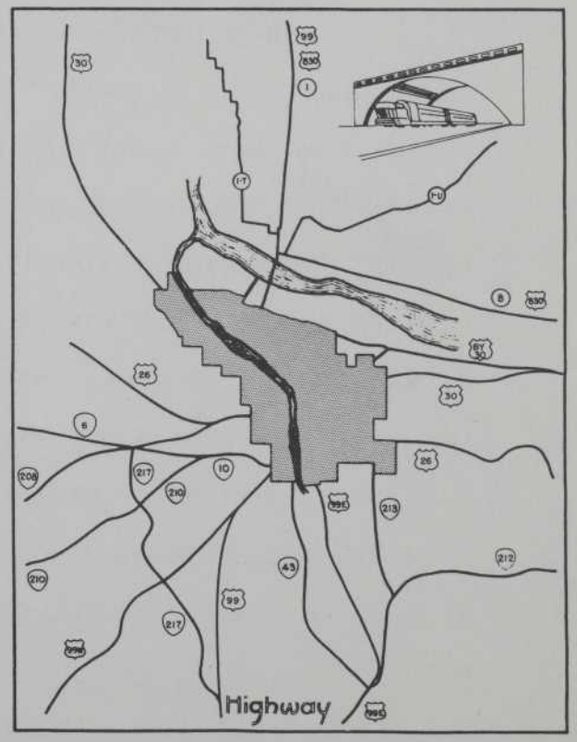
THE PORT OF PORTLAND IS SERVED BY MORE THAN FIFTY STEAMSHIP LINES. CURRENT WATER-BORNE COMMERCE APPROACHED 12 MILLION TONS CONSISTING LARGELY OF LUMBER AND WOOD PRODUCTS, PAPER, WHEAT, FLOUR, AND FOOD PRODUCTS. THIRTY COMPANIES OPERATE RIVER BOATS ON THE UPPER COLUMBIA AND ITS TRIBUTARIES, MAINLY TRANSPORTING WHEAT DOWN STREAM AND PETROLEUM PRODUCTS TO THE INTERIOR.

PORTLAND IS SERVED BY FIVE MAJOR RAIL LINES AND SEVERAL "SHORT" LINES. IT IS THE NORTHERN TERMINUS OF THE SOUTHERN PACIFIC COMPANY, ONE OF THE MAJOR WEST COAST TERMINALS OF THE UNION PACIFIC RAILROAD, AND A TERMINAL FOR THE SPOKANE, PORTLAND, AND SEATTLE RAILWAY, THE GREAT NORTHERN RAILWAY AND THE NORTHERN PACIFIC RAILWAY.









Eight airlines serve Portland providing service to many continental points and direct service to Alaska, Hawaii and Pacific areas. The highway and road system serving Portland has been a deciding factor in the growth of the area as a trading, wholesaling, and manufacturing center. As the highways were improved and developed, motor transportation became competitive with water and rail facilities in the area served by Portland. Today, with the expanded network of highway routes, the most remote corners of the State are within 15 hours by truck from Portland.

There are seven US numbered routes augmented by six State routes converging upon the Portland area. Two of these US numbered routes, US99 and US30, are part of the Interstate Highway System. In addition to the heavy use of the State and local road system by passenger cars, an increasingly heavy use has been made of the system by motor freight lines. About 100 motor freight lines have terminals and facilities in Portland and haul a variety of freight to and from all parts of the trading area and many parts of the Nation. The heaviest motor freight movement uses US99E to serve the heavy population concentration west of the Cascades. The Upper Columbia River Highway, US30, is also an important motor freight route as it is the only water grade route through the Cascade Mountain Barrier.

Selected Traffic Generators

Commerce and industry are the generators of traffic in urban areas. The most important commercial generator of traffic in the Portland Study Area is the West Side Central Business District. On the basis of an Origin-Destination Study of the Portland Area made in 1946, it was found that about 16 of every 100 trips made within the area had an origin or a destination within this district. It is expected that the position of the Central Business District as a generator of traffic will not change appreciably in future years. Other commercial developments which attract traffic from more limited areas are located throughout the Portland Study Area. In general, the present and future location of such centers in the Portland Study Area is dependent on the distribution of population and availability of transportation facilities. Plans have been announced for two east side retail developments which would be important traffic generators. Both developments would be in proximity to the T. H. Banfield Freeway which will tap a large section of the populus East Side Residential Area. The effect of these traffic generators has been evaluated in this report.

An indication of the location of industrial traffic generators in the Portland Study Area is shown on Figure 3. This map shows the location of existing manufacturing concerns and the areas of probable future industrial expansion. Most of the present industrial areas and the areas of possible development are adequately served by the Freeway-Expressway System as is indicated on Figure 13. The main effect of industrial

FIGURE 3

INDUSTRIAL TRAFFIC GENERATORS IN PORTLAND STUDY AREA

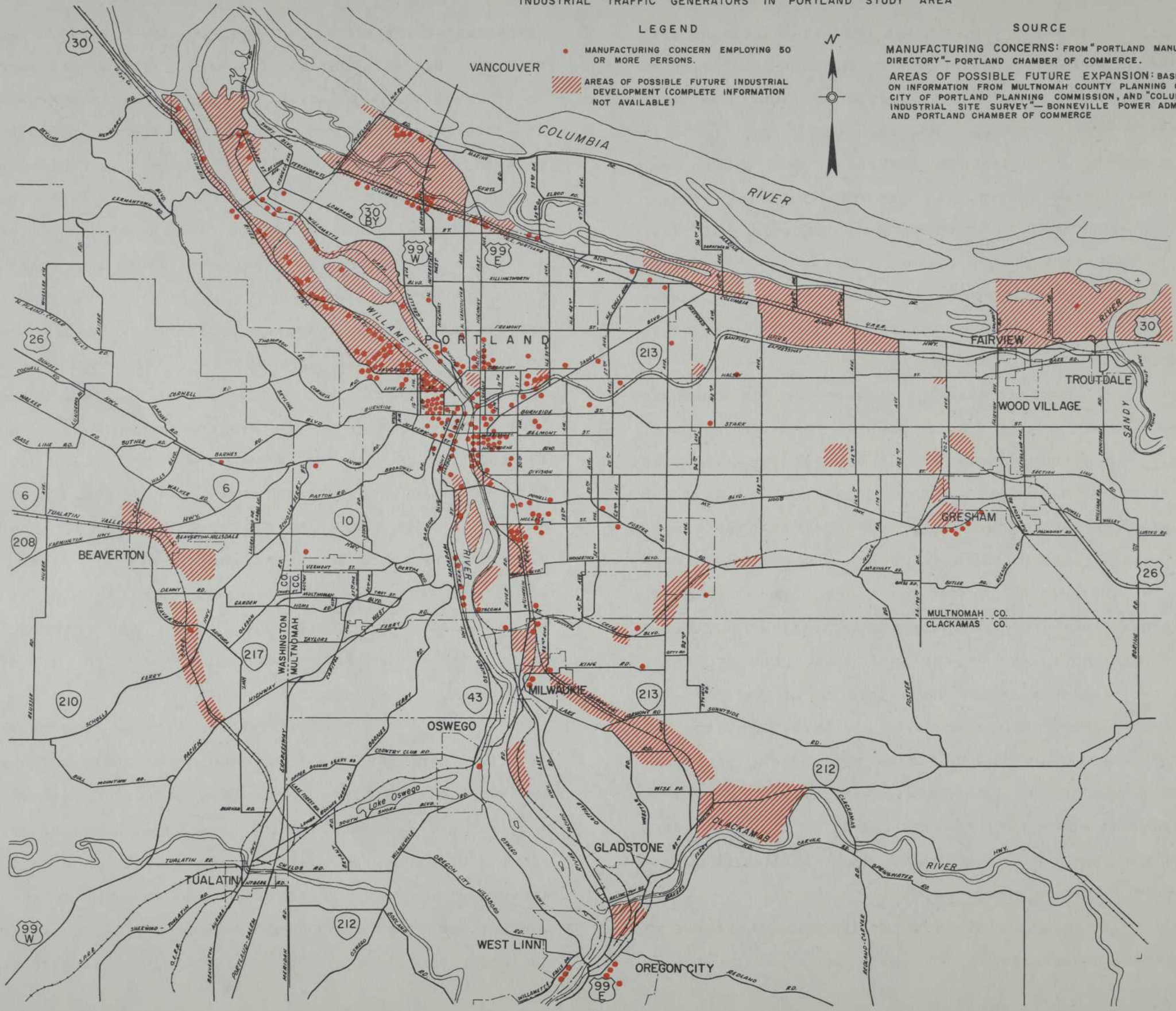
LEGEND

- MANUFACTURING CONCERN EMPLOYING 50 OR MORE PERSONS.
- AREAS OF POSSIBLE FUTURE INDUSTRIAL DEVELOPMENT (COMPLETE INFORMATION NOT AVAILABLE)

SOURCE

MANUFACTURING CONCERNS: FROM "PORTLAND MANUFACTURING DIRECTORY"- PORTLAND CHAMBER OF COMMERCE.

AREAS OF POSSIBLE FUTURE EXPANSION: BASED MAINLY ON INFORMATION FROM MULTNOMAH COUNTY PLANNING COMMISSION, CITY OF PORTLAND PLANNING COMMISSION, AND "COLUMBIA RIVER INDUSTRIAL SITE SURVEY"— BONNEVILLE POWER ADMINISTRATION, AND PORTLAND CHAMBER OF COMMERCE



LOCATIONS ON URBAN TRAFFIC PATTERNS IS THAT IT ADDS TO PEAK HOUR VOLUMES AS A RESULT OF HOME-TO-WORK MOVEMENTS. IN SOME CASES, IT CONTRIBUTES SIGNIFICANTLY TO THE PROPORTION OF HEAVY VEHICLES ON THE MAIN ROADS OF ACCESS TO THE AREA, THUS AFFECTING HIGHWAY CAPACITY.

Population Trends

A SIGNIFICANT POPULATION INCREASE WAS MADE IN THE PORTLAND STUDY AREA DURING THE 1940'S AS A RESULT OF THE LARGE WARTIME SHIP BUILDING PROGRAM. THE AREA WAS ABLE TO RETAIN THIS INCREASE AT THE END OF THE WAR AND ADD TO IT, MAINLY BECAUSE OF THE EXPANSION OF ITS BASIC EMPLOYMENT, BOTH IN ESTABLISHED INDUSTRIES AND NEW INDUSTRIES.

TABLE II AND FIGURE 4 SHOW THE POPULATION TREND IN PORTLAND AND THE PORTLAND URBAN AREA FOR THE YEARS 1900 TO 1975. THE 1955-1975 FORECAST WAS PREPARED BY THE PORTLAND CITY PLANNING COMMISSION.

IN GENERAL, THE LARGEST POPULATION GAINS FOR THE YEARS 1940 TO 1950 OCCURRED IN THE SUBURBAN AREAS SURROUNDING THE CITY.

AN ANALYSIS OF POPULATION CHANGES IN THE PORTLAND STUDY AREA IS SHOWN ON FIGURE 5. THE 1940-1950 CHANGES WERE DERIVED FROM CENSUS TRACT AND PRECINCT DATA PUBLISHED BY THE BUREAU OF THE CENSUS. AS IS SHOWN ON THE MAP, POPULATION IN A LARGE AREA WITHIN THE CITY LIMITS, BOTH ON THE EAST AND WEST SIDES OF THE WILLAMETTE RIVER, REMAINED RELATIVELY STABLE DURING THE 10 YEAR PERIOD. EXPANSION OF INDUSTRIAL AND COMMERCIAL ESTABLISHMENTS, IN FACT, CAUSED POPULATION DECREASES IN THE WEST SIDE AREA OF DOWNTOWN PORTLAND. HIGH POPULATION DENSITY IN CERTAIN OF THE EAST SIDE AREAS LEFT LITTLE ROOM FOR POPULATION EXPANSION. MINOR PER CENT INCREASES OCCURRED WITHIN THE CITY LIMITS IN THE OUTLYING DISTRICTS, THE LARGEST OF WHICH WAS THE INCREASE IN THE SPARSELY POPULATED AREA IN WEST SIDE PORTLAND NORTH OF N.W. THURMAN STREET AND CORNELL ROAD.

TABLE II

POPULATION TRENDS AND FORECAST
CITY OF PORTLAND AND PORTLAND URBAN AREA
1920 - 1975

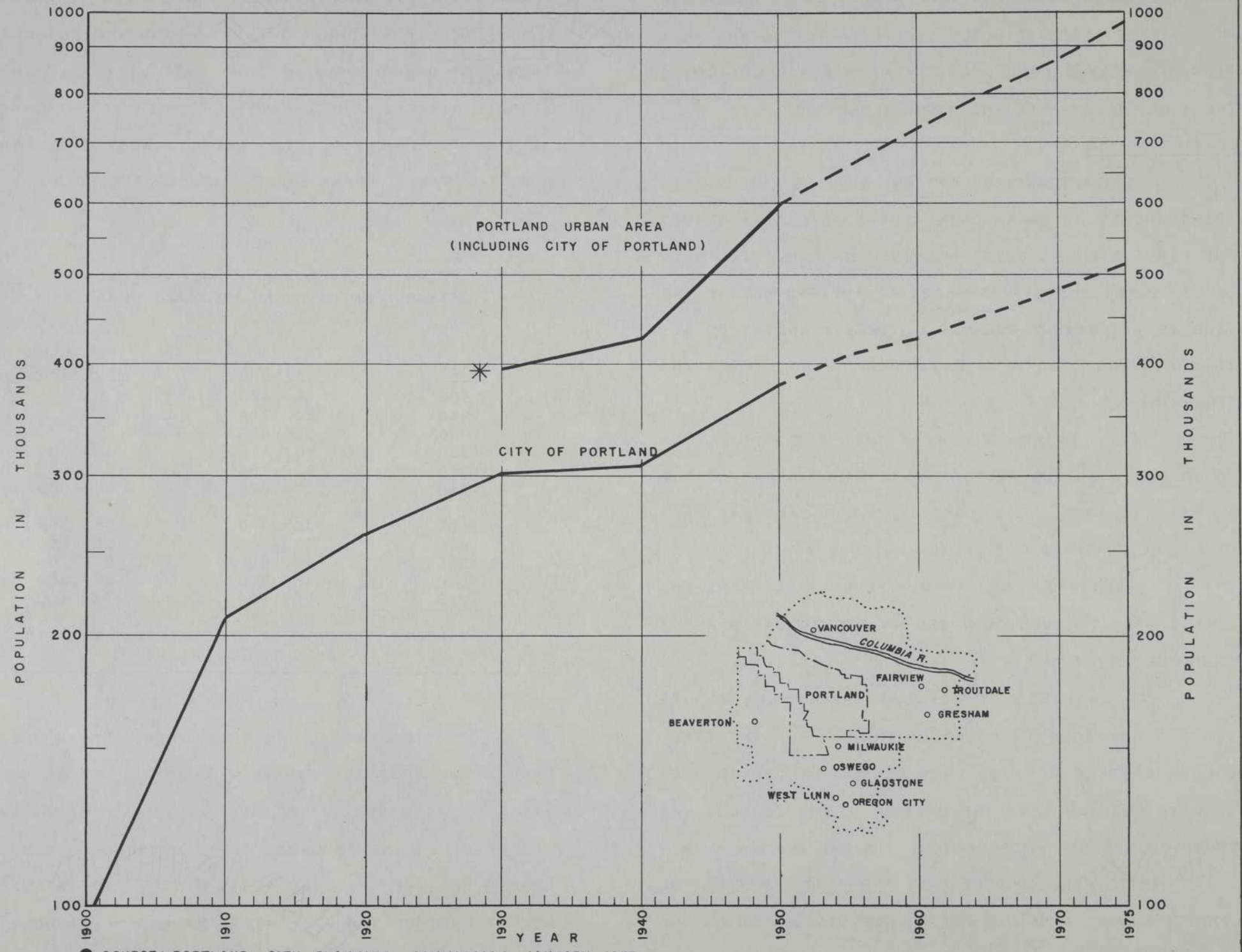
YEAR	CITY OF PORTLAND	PORTLAND URBAN AREA
1900	90,426	
1910	207,214	
1920	258,288	
1930	301,815	393,000
1940	305,394	422,000
1950	373,628	600,000
1955	402,900	666,300
1960	424,200	728,800
1965	451,600	801,200
1970	481,300	877,300
1975	505,800	955,400

SOURCE: PORTLAND CITY PLANNING COMMISSION, JANUARY, 1955.

THE HIGHEST PER CENT INCREASES IN THE PORTLAND STUDY AREA AS A WHOLE, OCCURRED IN THE SUBURBAN AREAS ON ALL SIDES OF THE CITY LIMITS. THE TWO LARGEST INCREASES IN THE SUBURBAN AREA OCCURRED IN WASHINGTON COUNTY WEST OF THE WILLAMETTE RIVER, AND IN MULTNOMAH COUNTY EAST OF THE WILLAMETTE RIVER. A TABULATION OF THESE CHANGES BY POPULATION DISTRICTS WITHIN THE STUDY AREA IS GIVEN ON TABLE III.

FIGURE 4

POPULATION TRENDS AND FORECAST
CITY OF PORTLAND AND PORTLAND URBAN AREA, 1900 — 1975
MEDIUM ESTIMATE, 1950 — 1975



● SOURCE: PORTLAND CITY PLANNING COMMISSION, JANUARY, 1955

✳ PORTLAND URBAN AREA POPULATION NOT AVAILABLE FOR YEARS 1900—1930

FIGURE 5

POPULATION TRENDS IN THE STUDY AREA

1940—1950 PER CENT CHANGE FOR COMBINED CENSUS TRACTS AND VOTING PRECINCTS

NOTE: RED FIGURES: I.E. A-65421 = POPULATION DISTRICT AND 1950 POPULATION

LEGEND

- − 25 OR MORE
- − 5 TO − 25
- + 5 TO − 5
- + 5 TO + 25
- + 25 TO + 50
- + 50 OR MORE

VANCOUVER

COLUMBIA RIVER

C-109403

F-10047

PORTLAND

E-28501

B-130401

D-28824

A-65421

G-74438

FAIRVIEW

TROUTDALE

WOOD VILLAGE

GRESHAM

MULTNOMAH CO.

CLACKAMAS CO.

BEAVERTON

K-29236

I-20927

MILWAUKIE

OSWEGO

H-46266

Lake Oswego

J-13677

GLADSTONE

CLACKAMAS RIVER

TUALATIN

WEST LINN

OREGON CITY

TABLE III

CHANGES IN PORTLAND STUDY AREA POPULATION
1940 - 1950

	POPULATION DISTRICT	PER CENT CHANGE
WITHIN CITY LIMITS		
EAST SIDE		
TOTAL		+ 26
SOUTH CITY LIMITS TO S.E. DIVISION ST.	A	+ 22
S.E. DIVISION ST. TO N. AND N.E. FREMONT ST.	B	+ 13
N. AND N.E. FREMONT ST. TO NORTH CITY LIMITS	C	+ 49
WEST SIDE		
TOTAL		+ 7
SOUTH CITY LIMITS TO S.W. JEFFERSON ST., 23RD AVE. AND N.W. CORNELL ROAD	D	+ 6
S.W. JEFFERSON ST., 23RD AVE. AND N.W. CORNELL ROAD TO N.W. THURMAN ST.	E	- 8
N.W. THURMAN ST. TO NORTH CITY LIMITS	F	+113
SUBURBAN AREA OUTSIDE CITY LIMITS		
EAST SIDE		
TOTAL		+ 88
MULTNOMAH COUNTY	G	+111
CLACKAMAS COUNTY	H	+ 60
WEST SIDE		
TOTAL		+ 93
MULTNOMAH COUNTY	I	+ 90
CLACKAMAS COUNTY	J	+ 64
WASHINGTON COUNTY	K	+114
TOTAL PORTLAND STUDY AREA		
EAST SIDE		+ 39
WEST SIDE		+ 36

NOTE: FIGURES BASED ON 1940 AND 1950 CENSUS TRACT AND VOTING PRECINCT DATA PUBLISHED BY THE BUREAU OF THE CENSUS.

IF POPULATION GROWTH DURING THE 20-YEAR PERIOD FROM 1955-1975 FOLLOWS THE TRENDS EXPERIENCED DURING THE 1940-1950 PERIOD, FURTHER LARGE SCALE SUBURBAN INCREASES ARE TO BE EXPECTED, WITH INCREASES OF A SMALLER MAGNITUDE WITHIN THE CITY LIMITS. ACCORDING TO THE CITY PLANNING COMMISSION FOPULATION FORECAST, CITY OF PORTLAND POPULATION IS EXPECTED TO REACH 505,800 BY 1975, A 35 PER CENT INCREASE OVER THE 1950 LEVEL. A 59 PER CENT INCREASE IS ANTICIPATED FOR THE PORTLAND URBAN AREA FROM 1950 TO 1975. BASED ON INFORMATION FROM THE MULTNOMAH COUNTY PLANNING COMMISSION, POPULATION IN THE EASTERN MULTNOMAH COUNTY PORTION OF THE STUDY AREA IS EXPECTED TO INCREASE 4.5 PER CENT PER YEAR DURING THE NEXT TWENTY YEARS. TRAFFIC VOLUME IN THIS AREA WILL GROW AT AN EVEN FASTER RATE. LARGE TRAFFIC VOLUME INCREASES ARE ALSO EXPECTED IN ALL OTHER SUBURBAN AREAS.

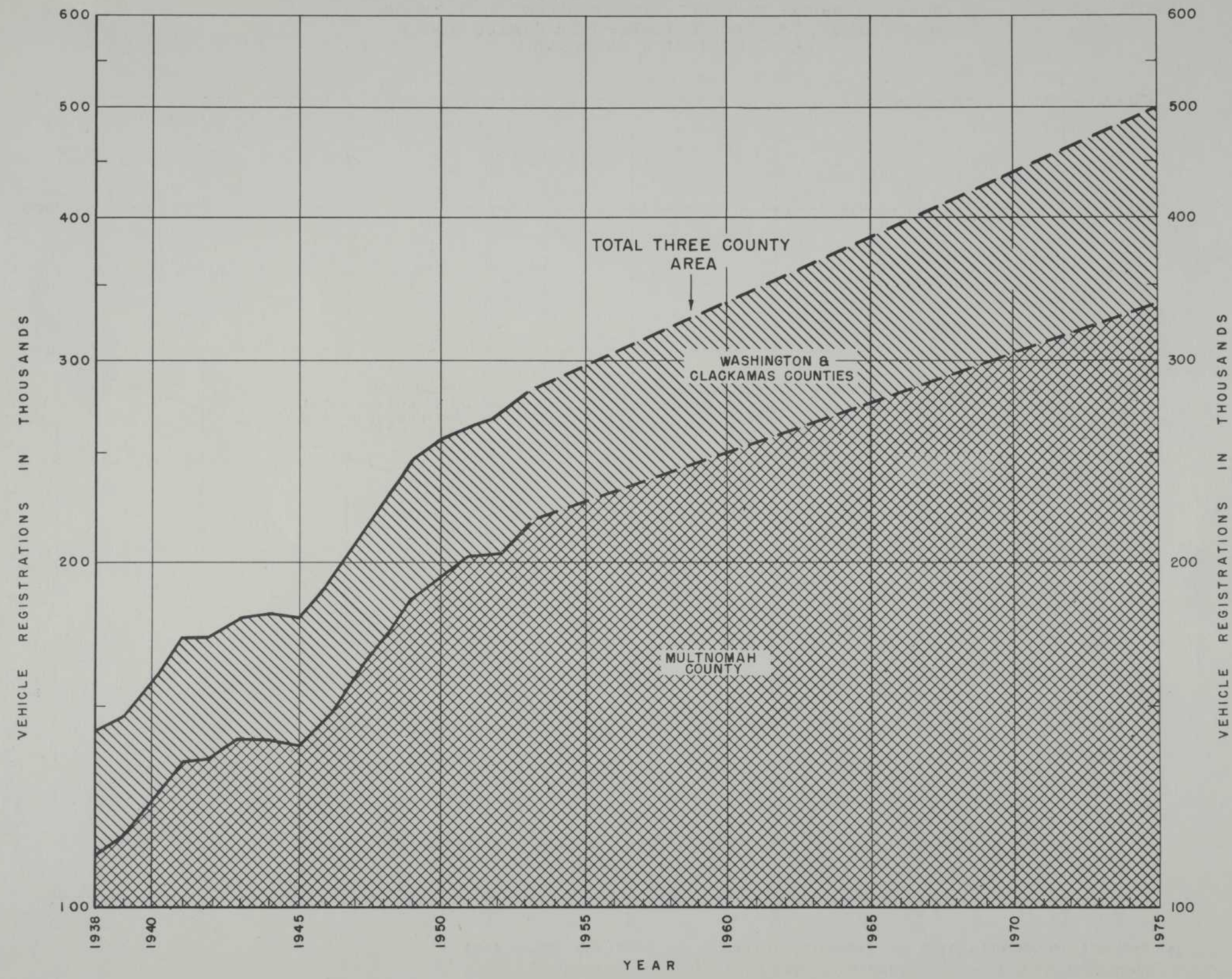
THE FREEWAY-EXPRESSWAY SYSTEM DEVELOPED IN THIS REPORT HAS BEEN DESIGNED TO GIVE MOTORISTS IN THESE EXPANDING AREAS AND IN THE EXISTING POPULATED AREAS WITHIN THE CITY, EASY ACCESS TO THE COMMERCIAL AND INDUSTRIAL AREAS AND OTHER IMPORTANT GENERATORS OF TRAFFIC IN THE PORTLAND STUDY AREA.

VEHICLE REGISTRATIONS

THE NUMBER OF REGISTERED VEHICLES IN THE OREGON PORTION OF THE PORTLAND METROPOLITAN AREA--MULTNOMAH, CLACKAMAS, AND WASHINGTON COUNTIES--INCREASED 63 PER CENT DURING THE PERIOD FROM 1940 TO 1950. IN 1953 THE NUMBER OF REGISTERED VEHICLES REACHED 286,170 AND IT IS ESTIMATED THAT BY 1975 THIS NUMBER MAY APPROACH 500,000. THE EXPECTED INCREASE IN THE NUMBER OF VEHICLES, SHOWN IN FIGURE 6, COUPLED WITH THE EXPECTED INCREASE IN MILES DRIVEN PER VEHICLE AND PORTLAND'S POSITION AS COMMERCIAL CENTER FOR A RAPIDLY GROWING REGION, WILL HAVE AN IMPORTANT EFFECT ON TRAFFIC CONDITIONS IN THE PORTLAND STUDY AREA DURING FUTURE YEARS.

FIGURE 6
TOTAL VEHICLE REGISTRATIONS, 1938 TO 1975
MULTNOMAH COUNTY & THREE COUNTY AREA (MULTNOMAH, WASHINGTON & CLACKAMAS)

PROJECTION 1953 — 1975

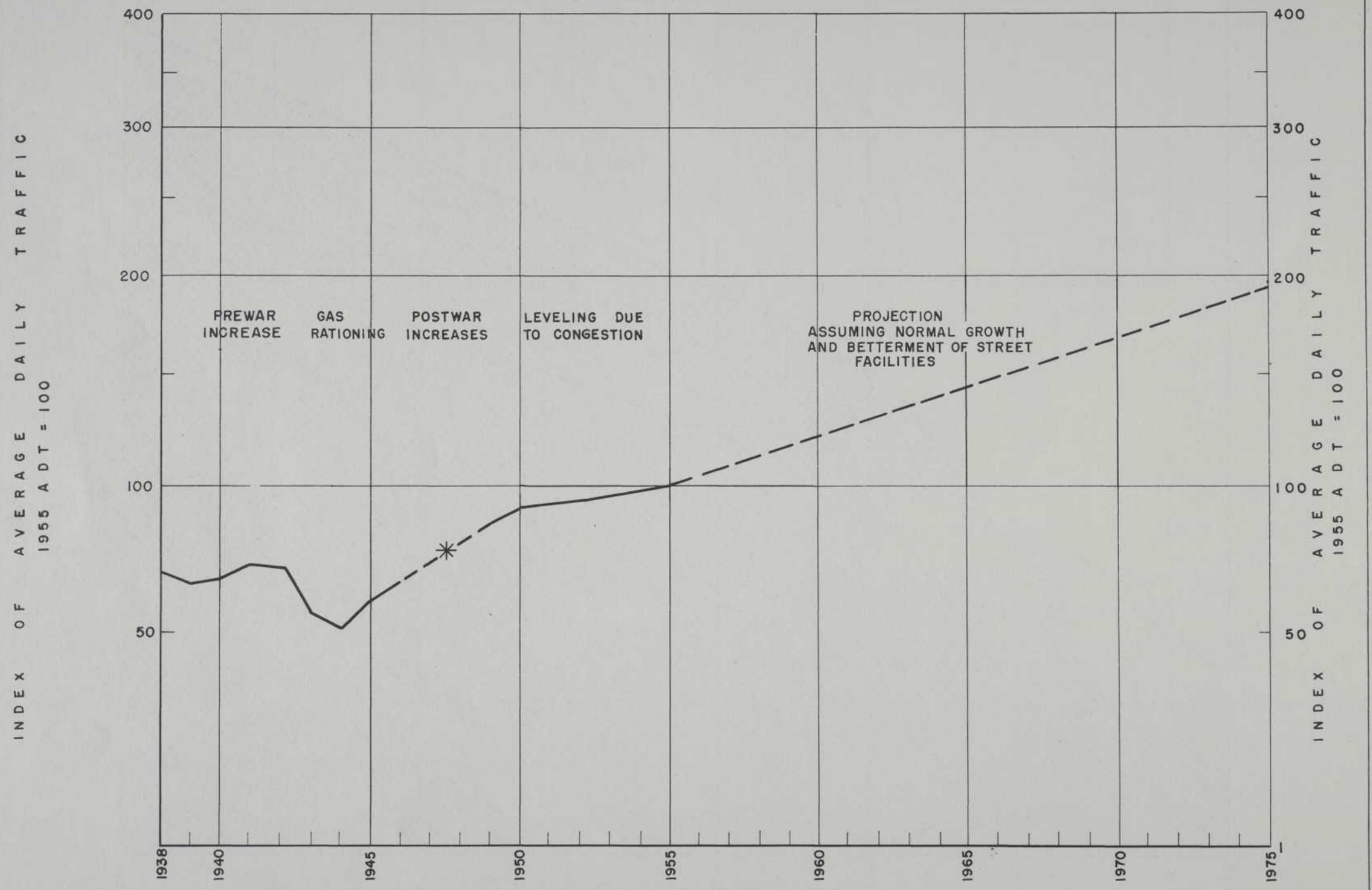


● SOURCE: 1938—1953 DATA FROM MOTOR VEHICLE DIVISION, SECRETARY OF STATE
1953—1975 PROJECTION BY HIGHWAY DEPARTMENT

FIGURE 7

INDEX OF AVERAGE DAILY TRAFFIC AT FIVE PORTLAND LOCATIONS
(BURNSIDE BRIDGE, N. GREELEY ST. & PORTLAND BLVD., N.W. 19th & LOVEJOY ST., S.E. 50th AVE., FOSTER RD. & POWELL BLVD. & N.E. FREMONT ST. & UNION AVE.)

(1955 = 100)



● 1955–1975 PROJECTION BASED ON ESTIMATED INCREASES IN PORTLAND URBAN AREA POPULATION, VEHICLE USE, & NUMBER OF VEHICLES PER 100 PERSONS

✳ DATA NOT AVAILABLE FOR 1946, 1947 & 1948

TRAFFIC TRENDS AND FORECASTS - STUDY AREA

THE RATE OF GROWTH OF TRAFFIC VOLUMES IN THE PORTLAND STUDY AREA WILL VARY FROM AREA TO AREA IN ACCORDANCE WITH THE CHANGES IN POPULATION AND COMMERCIAL AND INDUSTRIAL ACTIVITY. A COMPOSITE INDEX OF TRAFFIC VOLUME AT FIVE PORTLAND LOCATIONS IS SHOWN ON FIGURE 7. IN GENERAL, THE INDEX ACCURATELY REFLECTS THE CHANGES IN AVERAGE DAILY TRAFFIC IN THE PORTLAND STUDY AREA FOR THE YEARS PRIOR TO 1950. FOR THE YEARS FROM 1950-1955, HOWEVER, A LEVELING OFF OF TRAFFIC IS INDICATED. THIS STABILIZING OF TRAFFIC VOLUME--NOT TYPICAL OF THE PORTLAND STUDY AREA--WAS CAUSED BY THE FACT THAT TRAFFIC VOLUME WAS APPROACHING STREET CAPACITY AT SEVERAL OF THE LOCATIONS INCLUDED IN THE INDEX. WHEN SUCH CONGESTION OCCURS, MOTORISTS TEND TO SEEK NEW ROUTES AND THE TRAFFIC VOLUME AT CONGESTED LOCATIONS TENDS TO STABILIZE AT CAPACITY. THE PROJECTION OF TRAFFIC DURING THE PERIOD FROM 1955 TO 1975 SHOWS THE LEVEL OF TRAFFIC VOLUME WHICH MIGHT BE EXPECTED IF STREET CAPACITY WERE REASONABLY ADEQUATE.

A PICTURE OF TRAFFIC TRENDS AT TWO LOCATIONS WHICH HAVE EXPERIENCED MORE SIGNIFICANT INCREASES IN TRAFFIC VOLUME DURING THE PAST YEARS IS SHOWN ON FIGURE 8. INCREASED TRAFFIC VOLUMES ON THE ROSS ISLAND BRIDGE RESULTED IN PART FROM ITS USE AS AN ACCESS TO EAST SIDE AREAS WHICH ARE EXPERIENCING SIGNIFICANT RESIDENTIAL GAINS. SOME LEVELING OFF OF TRAFFIC DURING THE PAST FEW YEARS ON THE ROSS ISLAND BRIDGE HAS RESULTED FROM CONGESTION DURING PEAK HOURS. AS SHOWN ON THE CHART, AN EVEN MORE SIGNIFICANT INCREASE IN TRAFFIC VOLUME HAS OCCURRED ON S.W. HARBOR DRIVE. THIS RESULTS FROM ITS USE AS AN EXPRESSWAY ROUTE INTO THE CITY CENTER BOTH BY MOTORISTS FROM RAPIDLY GROWING EAST SIDE AREAS AND BY MOTORISTS FROM THE EXPANDING AREAS TO THE SOUTHWEST.

FIGURE 8
TREND OF AVERAGE DAILY TRAFFIC
ON ROSS ISLAND BRIDGE & S.W. HARBOR DRIVE
SOUTH OF S.W. MARKET STREET.

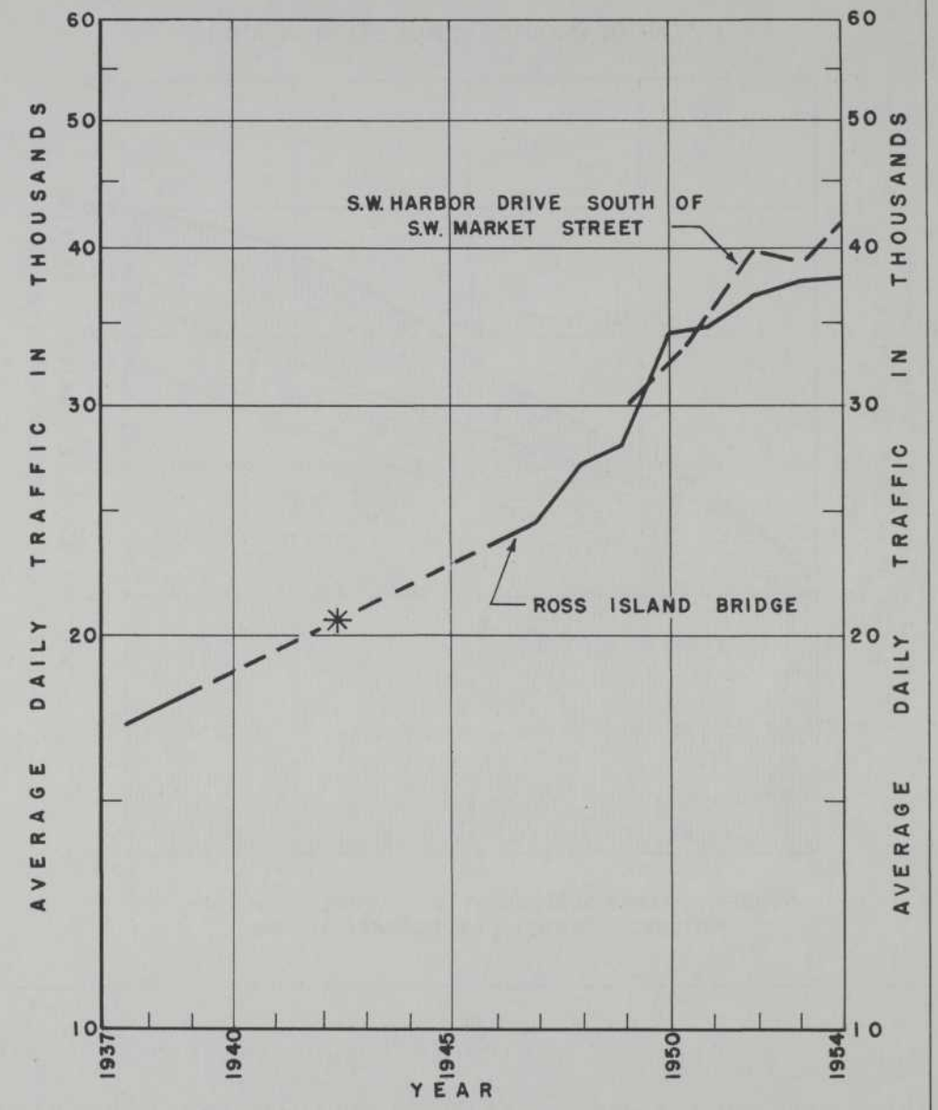
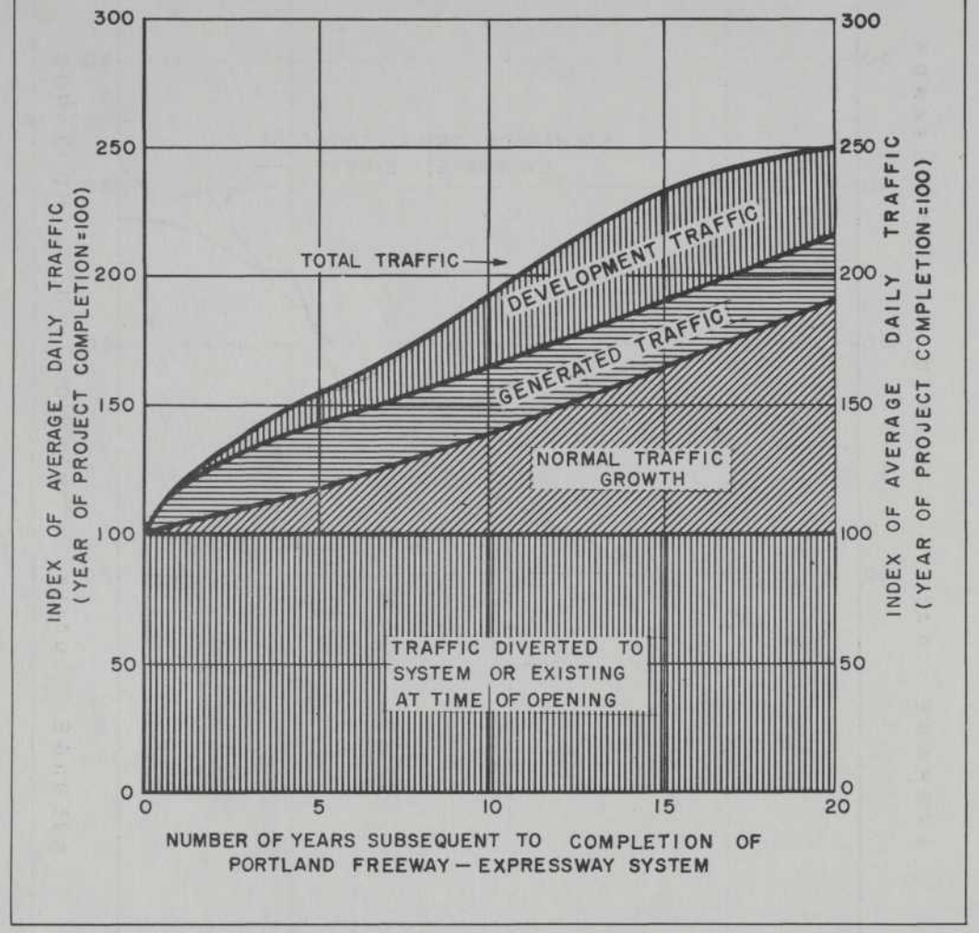


FIGURE 9

INDEX OF AVERAGE DAILY TRAFFIC
ON THE PROPOSED PORTLAND FREEWAY-EXPRESSWAY SYSTEM
(YEAR OF PROJECT COMPLETION = 100)



A REVIEW OF VEHICULAR VOLUME INCREASES ON THE EIGHT WILLAMETTE RIVER BRIDGES WITHIN THE CORPORATE LIMITS OF PORTLAND FOR THE PERIOD 1946-1955 INCLUSIVE WAS MADE. THESE EIGHT BRIDGES IN 1946 CARRIED A COMBINED VOLUME OF 184,504 VEHICLES. THE 1955 PROJECTED ADT FOR ALL VEHICLES ON THE SAME IS EXPECTED TO BE 257,200; THUS A 40 PER CENT INCREASE WAS REALIZED IN THE LAST TEN YEARS. A STUDY OF TRAFFIC VOLUME INCREASE AT 27 "EXTERNAL CORDON STATIONS" FROM THE 1946 SURVEY SHOWED A 51 PER CENT INCREASE IN THE 10-YEAR PERIOD 1946-1955, INCLUSIVE. THE 27 "EXTERNAL CORDON STATIONS" IN THE PORTLAND AREA ACCOUNTED FOR 91,562 VEHICLES ENTERING AND LEAVING THE AREA IN 1946 AND 138,100 VEHICLES ENTERING AND LEAVING THE AREA IN 1955.

BECAUSE OF THE DIFFERENT GROWTH PATTERNS PREVAILING IN THE VARIOUS PORTLAND AREAS, IT IS DIFFICULT TO DERIVE A SINGLE FACTOR WHICH CAN BE USED TO EXPAND CURRENT TRAFFIC VOLUMES TO THE 1975 LEVEL. FOR PURPOSES OF THIS REPORT, HOWEVER, IT HAS BEEN ASSUMED THAT A DOUBLING OF PRESENT DAY TRAFFIC VOLUMES BY 1975 ON THE EXISTING ARTERIAL AND MAJOR STREET SYSTEM WILL OCCUR. THIS DOUBLING OF NORMAL TRAFFIC IS BASED ON THE FORECASTED INCREASE IN PORTLAND URBAN AREA POPULATION AND THE INCREASED USE OF THE MOTOR VEHICLE.

TRAFFIC TRENDS AND FORECASTS--FREEWAY-EXPRESSWAY SYSTEM

TRAFFIC VOLUMES ON THE PROPOSED PORTLAND FREEWAY-EXPRESSWAY SYSTEM ITSELF WOULD EXPAND AT A FASTER RATE. FIGURE 9 INDICATES THE GROWTH OF TRAFFIC VOLUMES WHICH MIGHT BE EXPECTED DURING THE FIRST 20 YEARS OF OPERATION. FOR PURPOSES OF COMPARISON, IT HAS BEEN ASSUMED THAT THE ENTIRE PROJECT WOULD BE OPENED TO PUBLIC USE AT ONE TIME. IT IS ESTIMATED THAT 20 YEARS AFTER COMPLETION, TRAFFIC VOLUMES ON THE SYSTEM WOULD BE 150 PER CENT ABOVE THE LEVEL OF THE FIRST YEAR OF USE. TO ILLUSTRATE THE EFFECT OF THE ESTABLISHMENT OF THE FREEWAY-EXPRESSWAY SYSTEM ON TRAFFIC PATTERNS, TOTAL TRAFFIC HAS BEEN DIVIDED INTO FOUR COMPONENTS AS

SHOWN ON FIGURE 9. THESE COMPONENTS ARE AS FOLLOWS:

1. TRAFFIC DIVERTED TO THE SYSTEM, OR EXISTING ON THE SYSTEM AT TIME OF OPENING. THIS VOLUME HAS BEEN USED AS THE BASE IN COMPUTING THE INDEX OF TRAFFIC.
2. NORMAL TRAFFIC GROWTH IS THE INCREASE IN VOLUME WHICH MIGHT NORMALLY BE EXPECTED TO DEVELOP AS THE RESULT OF POPULATION INCREASES, INCREASED MOTOR VEHICLE USE AND OWNERSHIP. THIS GROWTH MAY BE EXPECTED TO OCCUR WITH OR WITHOUT THE BENEFIT OF THE FREEWAY-EXPRESSWAY SYSTEM, ASSUMING COMPLETE CONGESTION ON PORTLAND STREETS IS NOT REACHED.
3. GENERATED TRAFFIC CONSISTS OF TRIPS THAT WOULD BE MADE ONLY IF THE NEW FACILITIES WERE AVAILABLE. IT IS MADE UP OF NEW TRIPS NOT PREVIOUSLY MADE BY ANY MODE OF TRAVEL AND TRIPS THAT WERE PREVIOUSLY MADE TO DIFFERENT DESTINATIONS BUT WERE SHIFTED TO THE FREEWAY-EXPRESSWAY SYSTEM BECAUSE OF ITS ATTRACTIVENESS. LIMITED DATA AVAILABLE FOR OTHER FREEWAYS AND EXPRESSWAYS IN THE COUNTRY INDICATE THAT VOLUME INCREASES ATTRIBUTABLE TO GENERATED TRAFFIC RANGE UP TO 30 PER CENT OF TOTAL TRAFFIC DURING THE FIRST FEW YEARS AFTER OPENING. FOR THE PORTLAND FREEWAY-EXPRESSWAY SYSTEM AN INCREASE OF 20 PER CENT HAS BEEN ASSUMED.
4. DEVELOPMENT TRAFFIC IS THAT DUE TO IMPROVEMENTS ON ADJACENT LAND OVER AND ABOVE THE DEVELOPMENT WHICH WOULD HAVE TAKEN PLACE HAD NOT THE NEW HIGHWAY SYSTEM BEEN CONSTRUCTED. IT IS THE VOLUME CAUSED BY THE INFLUENCE OF THE FREEWAY-EXPRESSWAY SYSTEM ON THE DETERMINATION OF THE LOCATION OF NEW INDUSTRIAL PLANTS, RETAIL CENTERS, HOUSING AND RECREATIONAL DEVELOPMENTS.

THE TRAFFIC PROJECTION FACTOR FOR THE INCREASE IN TRAFFIC VOLUME ON THE FREEWAY-EXPRESSWAY SYSTEM, 2.50 FOR THE 20TH YEAR OVER THE 1ST YEAR, HAS BEEN USED AS THE TRAFFIC PROJECTION FACTOR. BECAUSE OF THE POSSIBILITY OF INTENSIVE INDUSTRIAL-COMMERCIAL-RESIDENTIAL DEVELOPMENT IN AREAS WITH EASY ACCESS TO THE FREEWAY-EXPRESSWAY SYSTEM, A HIGH TRAFFIC PROJECTION FACTOR OF 3.00 COULD POSSIBLY RESULT FOR THE 20 YEAR PERIOD OF THE ESTIMATE.

1955 TRAFFIC FLOW

THE 1955 TRAFFIC FLOW MAP, FIGURE 10, GIVES A GRAPHIC INDICATION OF THE MAGNITUDE OF TRAFFIC VOLUMES AS THEY PRESENTLY EXIST AND THE KEY STREETS IN PORTLAND AND VICINITY THAT ARE ACCOMMODATING THIS FLOW OF TRAFFIC. ONLY THOSE STATE HIGHWAYS AND ARTERIAL STREETS WITH AN APPRECIABLE VOLUME OF TRAFFIC ARE SHOWN ON THE ILLUSTRATION. NO ATTEMPT HAS BEEN MADE TO SHOW THE CONCENTRATION OF TRAFFIC IN THE WEST SIDE OR EAST SIDE BUSINESS DISTRICTS AS SUCH CONCENTRATION IS IN A RELATIVELY CONFINED AREA AND IS NOT GERMANE TO THE OVER-ALL ANALYSIS.

IT CAN BE READILY SEEN THAT THE STREETS AND HIGHWAYS CARRYING THE MAXIMUM FLOW OF TRAFFIC ARE THOSE WHICH HAVE OF RECENT YEARS BEEN IMPROVED TO A STANDARD AS WILL ACCOMMODATE GREATER VOLUMES OF TRAFFIC. HARBOR DRIVE IS RESPONSIBLE FOR THE LARGEST CONCENTRATIONS OF TRAFFIC IN THE CITY OF PORTLAND--POINTING OUT THAT THE HIGHER THE LEVEL OF DESIGN THE MORE ITS GREATER ATTRACTIVENESS TO TRAFFIC AND THE MORE ITS USE IS ACCENTUATED.

HIGHWAY CAPACITY

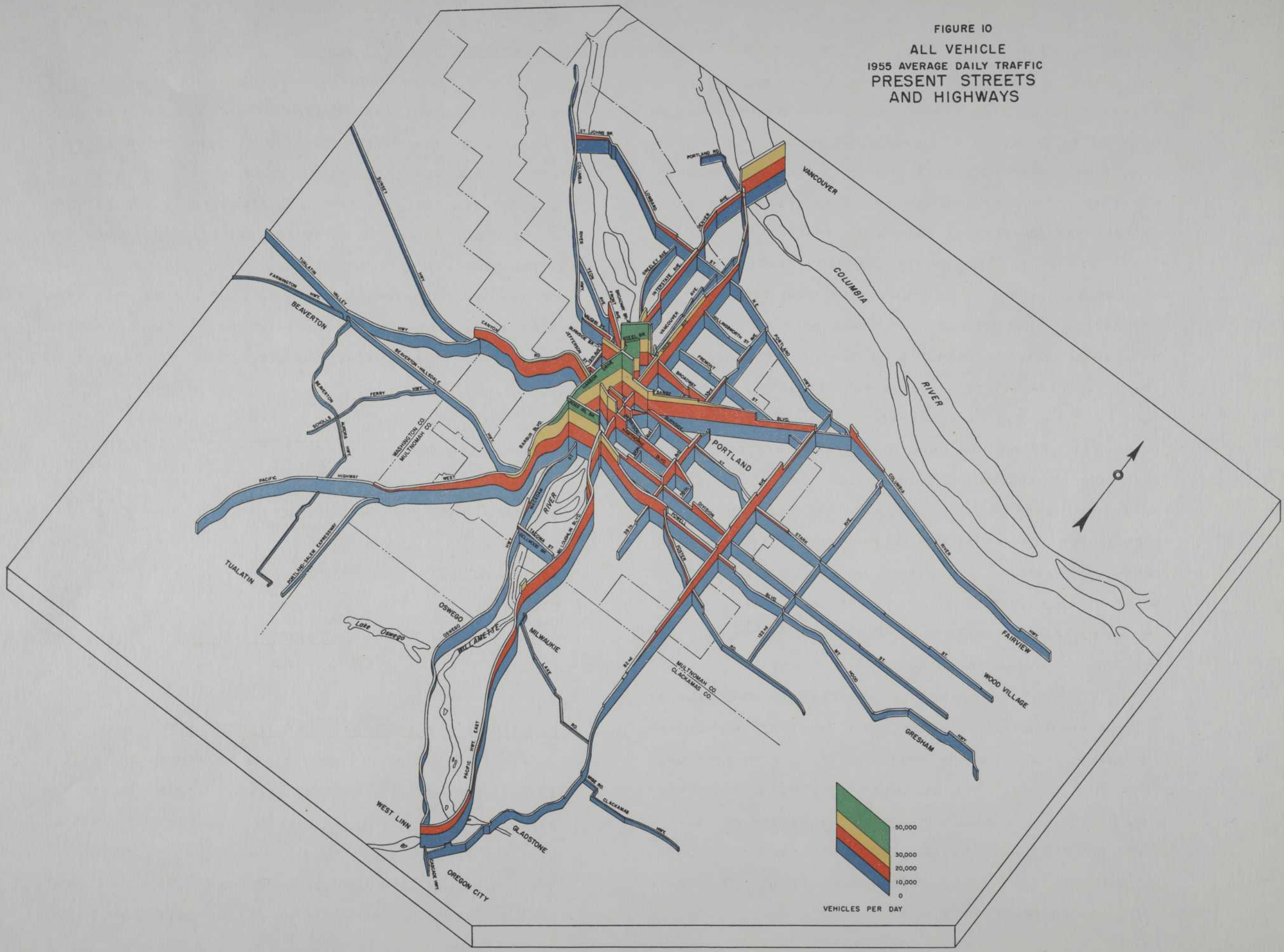
THE HIGHWAY CAPACITIES QUOTED HEREIN WERE COMPUTED BY THE USE OF FORMULAE AND TABLES DEVELOPED BY THE COMMITTEE ON HIGHWAY CAPACITY OF THE HIGHWAY RESEARCH BOARD AND CONTAINED IN THE "HIGHWAY CAPACITY MANUAL." THE TERM "PRACTICAL CAPACITY" WAS DEFINED BY THE COMMITTEE AS "THE MAXIMUM NUMBER OF VEHICLES THAT CAN PASS A GIVEN POINT ON A ROADWAY OR IN A DESIGNATED LANE DURING ONE HOUR WITHOUT THE TRAFFIC DENSITY BEING SO GREAT AS TO CAUSE UNREASONABLE DELAY, HAZARD, OR RESTRICTION TO THE DRIVERS' FREEDOM TO MANEUVER UNDER THE PREVAILING ROADWAY AND TRAFFIC CONDITIONS."

ALTHOUGH CAPACITY IS DEFINED IN TERMS OF VEHICLES PER HOUR, IT CAN BE EXPRESSED IN TERMS OF ADT (AVERAGE DAILY TRAFFIC). TO DO SO IT IS NECESSARY TO KNOW WHAT PER CENT OF THE ADT OCCURS DURING THE PEAK HOUR. WHEN CAPACITY IS SO EXPRESSED, IT MEANS THAT AN ADT OF THAT AMOUNT WILL RESULT IN A PEAK HOUR VOLUME EQUAL TO THE HOURLY CAPACITY OF THE FACILITY.

ANY EXPRESSION OF CAPACITY IS INTIMATELY ASSOCIATED WITH THE OPERATING SPEED OF MOTOR VEHICLES USING THE FACILITY UNDER STUDY. THIS ASSOCIATION WITH RUNNING SPEED IS NECESSARY BECAUSE EACH MOTOR VEHICLE OPERATOR SELECTS A SPEED RANGE IN WHICH HE PREFERS TO OPERATE. IN ORDER TO MAINTAIN HIS SPEED, HE MUST HAVE THE OPPORTUNITY TO PASS SLOWER VEHICLES WITHOUT UNREASONABLE DELAY. THE REQUIRED NUMBER OF PASSINGS INCREASES WITH AN INCREASE IN HIS SELECTED SPEED AND/OR IN THE NUMBER OF VEHICLES ON THE HIGHWAY. OPTIMUM CAPACITY OCCURS WHEN THE SPEED RANGE IS 35 TO 40 MILES PER HOUR; THEREFORE, THIS SPEED RANGE WAS SELECTED FOR COMPUTING CAPACITIES ON URBAN MULTI-LANE FACILITIES. SPEED STUDIES HAVE DEMONSTRATED THAT MOTORISTS IN URBAN AREAS GENERALLY PREFER THAT RANGE. IT SHOULD BE UNDERSTOOD THAT THE SPEED RANGE OF BETWEEN 35 TO 40 MILES PER HOUR IS NECESSARY TO EFFECT PRACTICAL CAPACITY

FIGURE 10

ALL VEHICLE
1955 AVERAGE DAILY TRAFFIC
PRESENT STREETS
AND HIGHWAYS



DURING THE PEAK HOURS ONLY. FOR OTHER PERIODS OF TIME THE SPEED IS CONTROLLED BY THE GEOMETRIC DESIGN OF THE FREEWAYS WHICH WILL AFFORD REASONABLY SAFE SPEEDS OF FROM 50 TO 60 MILES PER HOUR. OBVIOUSLY, IF DRIVERS CANNOT MAINTAIN THEIR SELECTED SPEED, THEIR FREEDOM TO MANEUVER IS RESTRICTED RESULTING IN DELAYS WHICH MAY BECOME UNREASONABLE. ALTHOUGH THE PHRASE "UNREASONABLE DELAY OR RESTRICTION TO THE DRIVERS' FREEDOM TO MANEUVER" IS SOMEWHAT SUBJECTIVE, THE COMMITTEE ON HIGHWAY CAPACITY HAS DEVELOPED A LARGE BODY OF SCIENTIFIC DATA WHICH MAKES POSSIBLE A RATIONAL DETERMINATION OF PRACTICAL CAPACITY FOR ANY HIGHWAY SECTION.

THE PRACTICAL CAPACITIES QUOTED IN THIS REPORT INDICATE THE MAXIMUM NUMBER OF VEHICLES PER DAY WHICH CAN BE ACCOMMODATED ON THE MOST CRITICAL SECTION OF THE FACILITY UNDER STUDY WITH EACH DRIVER FREE TO OPERATE HIS VEHICLE AT HIS CHOSEN SPEED DURING THE PEAK HOUR, WHICH WITHIN REASONABLE LIMITS IS ASSUMED TO BE 35 TO 45 MILES PER HOUR. ANY INCREASE IN VEHICLE VOLUMES WILL REDUCE THE TIME WHEN HE CAN SO OPERATE AND CONTINUED INCREASES IN VEHICLE VOLUMES WOULD BRING ABOUT A CONDITION WHERE ALL VEHICLES ON THE HIGHWAY WOULD OPERATE AT APPROXIMATELY THE SPEED OF THE SLOWEST VEHICLE WITH NO PASSING OPPORTUNITIES. WHEN THIS LAST CONDITION OCCURS, THE VEHICLES WILL QUEUE UP BEHIND SLOW MOVING VEHICLES AND COMPLETE STAGNATION OF TRAFFIC COULD RESULT FROM ANY NUMBER OF OCCURRENCES SUCH AS INTERSECTIONS AT GRADE, MERGING MOVEMENTS, DISABLED VEHICLES, OR TRAFFIC ACCIDENTS.

EXISTING WILLAMETTE RIVER BRIDGES

THE VEHICULAR CROSSINGS OF THE WILLAMETTE RIVER IN THE PORTLAND METROPOLITAN AREA IN 1955 WERE PROVIDED BY EIGHT BRIDGES WITH A TOTAL OF 36 TRAFFIC LANES. THE PRACTICAL CAPACITY OF THESE FACILITIES IS 251,500 VEHICLES PER DAY AS CONTRASTED TO THE 247,200 AVERAGE DAILY TRAFFIC USING THE BRIDGES. ALTHOUGH THE TOTAL CAPACITY SLIGHTLY EXCEEDS TOTAL TRAFFIC, SEVERAL OF THE BRIDGES ARE DEFICIENT OR WILL BECOME SO IN THE NEAR FUTURE AS TRAFFIC VOLUMES INCREASE WITH NORMAL GROWTH. THIS IS FURTHER SUMMARIZED IN THE TABULATION FOLLOWING:

WILLAMETTE RIVER BRIDGES	1955 A.D.T.	1955 NUMBER OF LANES	1955 CAPACITY
ST. JOHNS	13,500	4	35,000
BROADWAY	41,000	4	34,000
STEEL	42,700	4	42,000
BURNSIDE	41,000	6	36,000
MORRISON	22,500	3	20,000
HAWTHORNE	28,500	4	33,000
ROSS ISLAND	37,500	4	33,000
SELLWOOD	11,000	2	9,500
OREGON CITY-WEST LINN	9,500	2	9,000
TOTAL	247,200	33	251,500

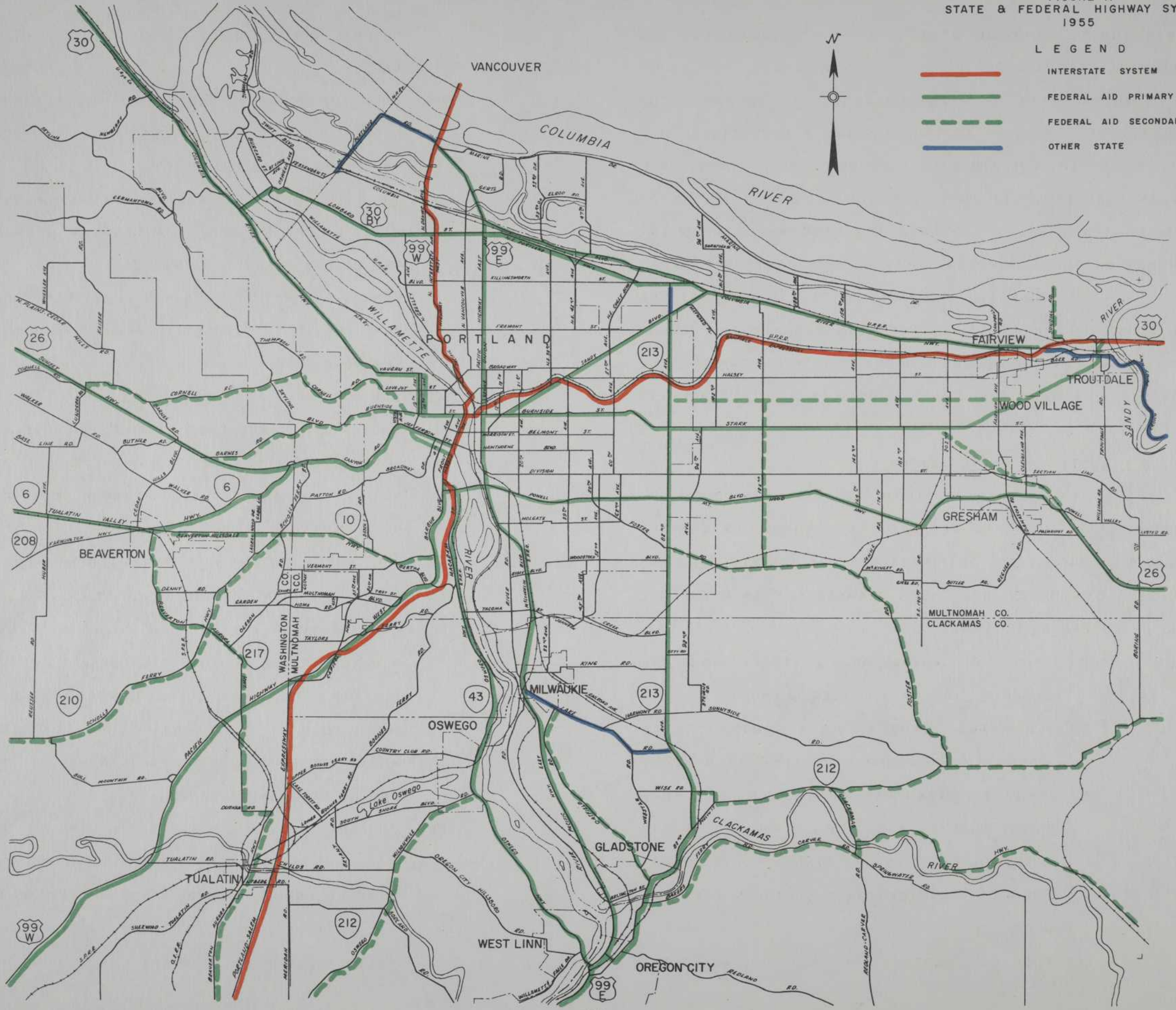
EXISTING STATE AND FEDERAL HIGHWAY SYSTEM

THE MAP IN FIGURE 11 SHOWS IN RED THE EXISTING INTERSTATE SYSTEM OF HIGHWAYS, IN GREEN THE FEDERAL-AID PRIMARY SYSTEM OF HIGHWAYS, IN DASHED GREEN THE FEDERAL-AID SECONDARY SYSTEM OF HIGHWAYS AND IN BLUE OTHER STATE HIGHWAYS IN THE PORTLAND METROPOLITAN URBAN AREA. THIS DEVELOPS AN APPRECIATION OF THE MAGNITUDE OF THE

FIGURE II
STATE & FEDERAL HIGHWAY SYSTEM
1955

LEGEND

- INTERSTATE SYSTEM
- FEDERAL AID PRIMARY SYSTEM
- FEDERAL AID SECONDARY SYSTEM
- OTHER STATE



EXISTING NETWORK OF STATE AND FEDERAL HIGHWAYS AS PRESENTLY SERVING PORTLAND AND ITS VICINITY. TO VISUALLY SUPERIMPOSE UPON THIS NETWORK OF HIGHWAYS, THE TRAFFIC FLOW (FIGURE 10) AND THE MAJOR DIRECTIONAL DESIRE LINES (FIGURE 12) WILL READILY SHOW THE IMPORTANCE OF THIS SYSTEM. IT IS TO DEVELOP PLANS FOR RELIEF OF CONGESTION THAT PRESENTLY EXISTS AND WHICH WILL INCREASE IN THE FUTURE ON THIS SYSTEM OF HIGHWAYS THAT THIS STUDY IS DIRECTED. IF THIS SYSTEM IS NOT EXPANDED OR EXTENDED AND ADEQUATELY COORDINATED WITH A FREEWAY AND EXPRESSWAY SYSTEM, STAGNATION WILL TAKE PLACE WHICH WILL RETARD THE NORMAL GROWTH OF PORTLAND AND ITS VICINITY.

MAJOR DIRECTIONAL DESIRE LINES

THE MAJOR DIRECTIONAL DESIRE LINES, WITH RESPECT TO THE PORTLAND METROPOLITAN AREA AS DETERMINED FROM THE 1946 ORIGIN-DESTINATION STUDY AND ADJUSTED FOR PRESENT DAY USAGE, ARE SHOWN GRAPHICALLY IN FIGURE 12 AND DESCRIBED AS FOLLOWS:

1. FROM THE DOWNTOWN AREA EASTERLY ALONG THE GENERAL LINE OF SULLIVAN GULCH.
2. FROM THE DOWNTOWN AREA SOUTHEASTERLY ALONG THE GENERAL LINE OF FOSTER ROAD.
3. FROM THE DOWNTOWN AREA SOUTHERLY TO A POINT ON THE EAST SIDE OF THE WILLAMETTE RIVER IN THE VICINITY OF MILWAUKIE.
4. FROM THE DOWNTOWN AREA SOUTHWESTERLY TOWARDS TIGARD.
5. FROM THE DOWNTOWN AREA WESTERLY ALONG THE GENERAL LINE OF CANYON ROAD INTO TUALATIN VALLEY.
6. FROM THE DOWNTOWN AREA NORTHWESTERLY AND ACROSS THE WILLAMETTE RIVER TO A TERMINUS IN THE ST. JOHNS DISTRICT.
7. FROM THE DOWNTOWN AREA NORTHERLY ALONG THE LINE OF N. ALBINA AVENUE, CROSSING THE COLUMBIA RIVER TO VANCOUVER.
8. FROM THE DOWNTOWN AREA NORTHEASTERLY TO A TERMINUS IN THE VICINITY OF N.E. 16TH AND SKIDMORE.
9. A NON-RADIAL NORTH-SOUTH DESIRE LINE IS INDICATED ON THE EAST SIDE OF THE WILLAMETTE RIVER ALONG THE APPROXIMATE LINE OF 30TH AVENUE AND EXTENDING FROM A SOUTHERLY TERMINUS IN THE MILWAUKIE VICINITY NORTHERLY TO FREMONT STREET CONTINUING IN LESSER MAGNITUDE TO VANCOUVER.
10. COMPARATIVELY A LESSER DESIRE LINE IS INDICATED IN THE NORTH PORTLAND AREA APPROXIMATING THE LINE OF N. LOMBARD STREET WITH TERMINI IN THE ST. JOHNS DISTRICT AND INTERSECTION OF N. PORTLAND BOULEVARD AND N. DELAWARE AVENUE.
11. COMPARATIVELY A LESSER DESIRE LINE IS INDICATED IN NORTHEAST PORTLAND ALONG THE LINE OF FREMONT AVENUE FROM N. ALBINA TO N.E. 47TH AVENUE. PERTINENT STATISTICAL FACTS AND COMPARISONS ARE LISTED HEREIN-

AFTER.

12. A NON-RADIAL NORTH-SOUTH DESIRE LINE IS INDICATED ALONG A LINE BETWEEN 72ND AND 82ND AVENUE. SUCH A LINE IS COMPOSED IN PART OF TRIPS BETWEEN OREGON CITY AND VIA US30 TO THE EAST.

13. ANOTHER RADIAL DESIRE LINE IS INDICATED IN THE SOUTHEAST AREA LYING IN APPROXIMATE AREA SERVED BY S.E. HAWTHORNE BOULEVARD AND S.E. DIVISION STREET.

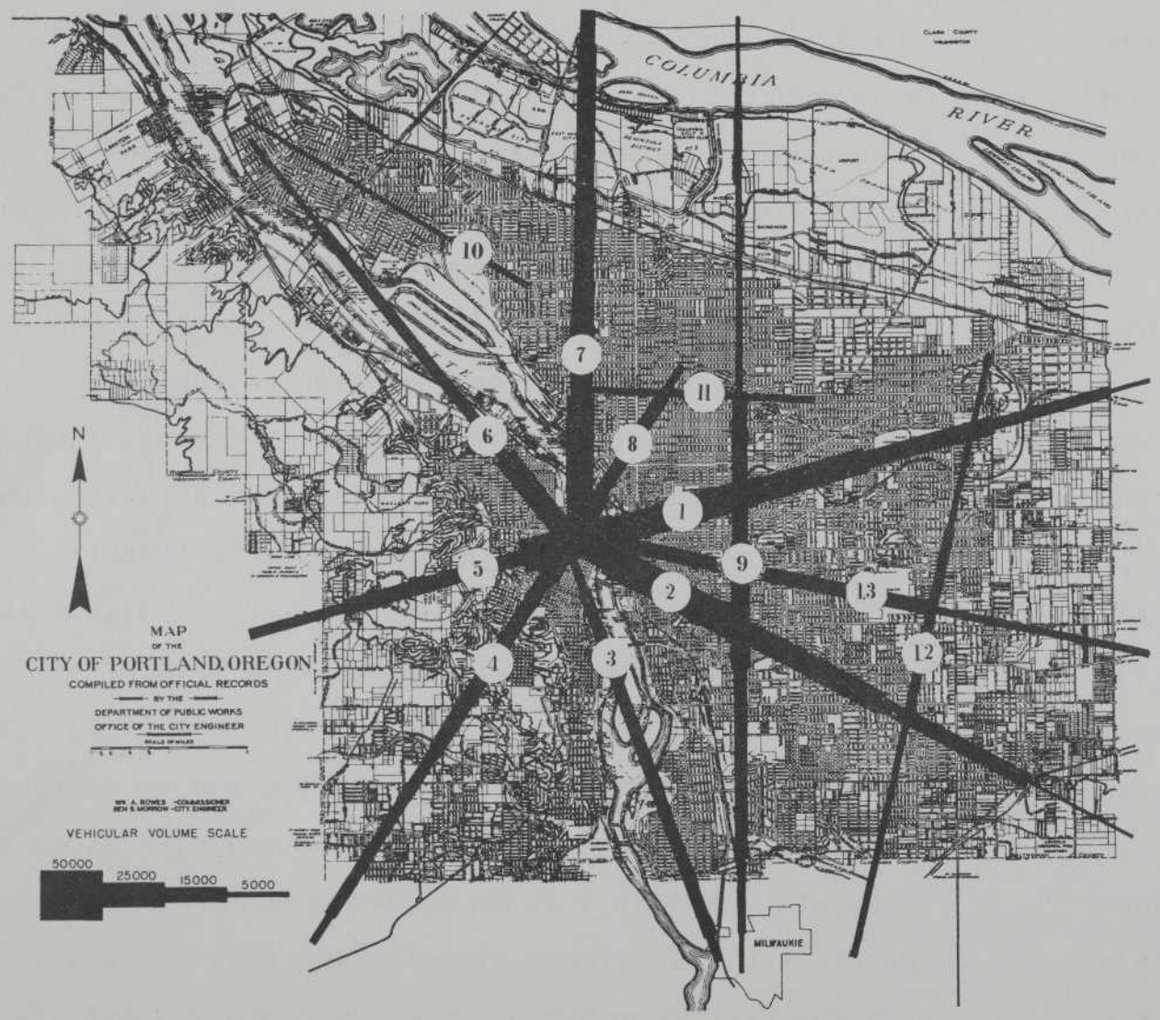


Figure 12 —Major Directional Desire Lines—All Types of Vehicles

THE EXISTING NETWORK OF STREETS AND HIGHWAYS IN PORTLAND AND VICINITY ON THE EAST SIDE OF THE WILLAMETTE RIVER (SEE FIGURE 11) HAS DEVELOPED AS A GRIDIRON PATTERN, THERE BEING NO DIRECT RADIAL ROUTES FROM THE CENTRAL WEST SIDE AREA OTHER THAN N.E. SANDY BOULEVARD, WHEREAS ON THE WEST SIDE OF THE WILLAMETTE RIVER THE DEVELOPMENT HAS BEEN MORE IN THE FORM OF RADIAL STREETS AND HIGHWAYS RATHER THAN A GRIDIRON SYSTEM--BOTH FORMS BEING INFLUENCED BY THE TOPOGRAPHY. THIS SYSTEM WAS REASONABLY ADEQUATE FOR THE LIGHT TRAFFIC OF EARLIER YEARS; HOWEVER, AS FAR BACK AS 1941 THE INADEQUACY OF THE EXISTING STREET NET BECAME APPARENT IN THAT CERTAIN STAGNATION WAS TAKING PLACE WITH RESPECT TO INGRESS AND EGRESS FROM THE WEST SIDE CENTRAL BUSINESS DISTRICT. AS A RESULT THEREOF, HARBOR DRIVE EXPRESSWAY AND ITS ULTIMATE CONVERSION TO FREEWAY STANDARDS, WAS CONCEIVED, PLANNED AND EXECUTED. CAPACITY DEFICIENCIES BEGAN TO EXIST ALONG THE ROUTINGS OF N.E. SANDY BOULEVARD, E. BURNSIDE AND E. STARK STREETS AND THIS COUPLED WITH THE NEED FOR THE RECONSTRUCTION OF THE COLUMBIA RIVER HIGHWAY (US30) TO INTERSTATE HIGHWAY STANDARDS, BROUGHT ABOUT THE CONSTRUCTION OF THE T. H. BANFIELD EXPRESSWAY TO FREEWAY STANDARDS.

THE EXISTING STREET NETWORK, AS IT HAS GROWN THROUGH THE YEARS, HAS BECOME SOMEWHAT OBSOLETE FROM A CAPACITY STANDPOINT. THIS IS QUITE APPARENT IN THE SECTION OF THIS REPORT TREATING WITH TRAFFIC TRENDS WHEN AN ANALYSIS (FIGURE 7) OF FIVE LOCATIONS ON EXISTING SURFACE STREETS IN THE CITY OF PORTLAND WAS MADE. IT WAS FOUND THAT IN RECENT YEARS THE NORMAL GROWTH PATTERN HAS TAKEN A DECIDED DROP, THIS BEING THE RESULT OF CAPACITY DEFICIENCIES. WITH THIS SYSTEM OF STREETS AND THE EVER GROWING POPULATION AND TRAFFIC LOAD IN THE PORTLAND METROPOLITAN AREA, IT IS APPARENT THAT THE PRESENT SYSTEM IS RAPIDLY BECOMING INADEQUATE TO ACCOMMODATE NOT ONLY FUTURE LOADS BUT PRESENT PEAK DEMANDS. IN THIS DIRECTION AND IN LIGHT OF PRESENT DAY DESIGN STANDARDS, IT IS ADVISABLE TO GIVE CONSIDERATION TO THE ESTABLISHMENT OF A FREEWAY-EXPRESSWAY SYSTEM AND THE CONSTRUCTION OF A NUMBER OF MAJOR STREETS INTEGRATED SO AS TO DEVELOP AN OVER-ALL TRAFFIC PLAN FOR PORTLAND AND VICINITY THAT WILL CARE FOR THE NEEDS OF THE AREA.

IN ESTABLISHMENT OF A PLAN, THERE ARE SEVERAL TYPES OF ROUTINGS OR LOCATIONS WHICH CAN BE GIVEN CONSIDERATION--ONE IS A GRIDIRON NET, ONE IS A RADIAL NET AND A THIRD IS A CIRCUMFERENTIAL NETWORK OF STREETS AND HIGHWAYS. THE FOCAL POINT OF ALL TRIPS (FIGURE 12) IS THE WEST SIDE CENTRAL BUSINESS DISTRICT AND IT IS THIS DESIRE FOR MOVEMENT THAT CREATES THE NEED FOR ADDITIONAL RADIAL ROUTES THAT WILL ACCOMMODATE THE FLOW BETWEEN ALL AREAS IN THE PORTLAND METROPOLITAN AREA AND THE CENTRAL WEST SIDE DISTRICT. THERE WAS, HOWEVER, A GRIDIRON PATTERN OF DESIRE EVIDENCED BY THE THREE NORTH-SOUTH DESIRE LINES BEING BISECTED BY TWO EAST-WEST DE-

SIRE LINES AND THUS ANY PROPOSED SYSTEM OF FREEWAYS AND EXPRESSWAYS IN PORTLAND AND VICINITY SHOULD TAKE INTO CONSIDERATION BOTH THE RADIAL AND GRIDIRON DESIRE OF THE TRAFFIC FLOW.

LEVELS OF DESIGN

LOOKING TO THE FUTURE SOME TWENTY YEARS (1975), A TRAFFIC PROJECTION FACTOR OF 2.50 SHOULD BE USED AND THE RESULTANT TRAFFIC VOLUMES WILL INDICATE THE TYPE OF FACILITIES NECESSARY. THIS MEANS THERE WILL BE 150 PER CENT MORE TRAFFIC IN 1975 THAN THERE IS TODAY (1955) IF A FREEWAY AND EXPRESSWAY SYSTEM WERE BUILT. SUCH AN INCREASE REFLECTS GENERATED AND DEVELOPED TRAFFIC AS WELL AS NORMAL GROWTH, AND FURTHER SHOULD BE CONSIDERED A MINIMUM RATE FOR PURPOSES OF DESIGN. SUCH A FACTOR IS TO BE USED WITH JUDGMENT.

THIS REPORT ONLY TREATS WITH THE DEVELOPMENT OF THE FREEWAY, EXPRESSWAY AND MAJOR STREET SYSTEMS. IT IS FELT THAT THE ARTERIAL STREETS THAT WOULD BE INTEGRATED INTO THESE THREE LEVELS OF DESIGN WOULD BE A FUNCTION OF NORMAL GROWTH, SUCH AS ROUTINE REPLACEMENT OF STREETS, AND SHOULD NOT BE ANALYZED AT THIS TIME. THE DEVELOPMENT OF THE ARTERIAL STREET IS CONSIDERED A FUNCTION OF LAND SERVICE WITHIN THE SCOPE OF THIS STUDY. TABLE IV SUMMARIZES THE CHARACTERISTICS OF URBAN ARTERIAL HIGHWAYS CLASSIFIED AS MAJOR STREETS, EXPRESSWAYS AND FREEWAYS. THESE DESCRIPTIVE DATA CONFORM TO THE DEFINITIONS ADOPTED BY AASHO AND THESE THREE LEVELS OF DESIGN CAN BE BRIEFLY DESCRIBED AS FOLLOWS:

FREEWAY:	COMPLETE CONTROL OF ACCESS, NO CROSSINGS AT GRADE, NO LEFT TURNS, NO SIGNALS AND NO PARKING.
EXPRESSWAY:	PARTIAL CONTROL OF ACCESS, SOME INTERSECTIONS AT GRADE, BUT MOSTLY SEPARATED; LEFT TURNS PROVIDED FOR WITH LEFT-TURN REFUGES, NO PARKING.
MAJOR STREET:	ONLY INCIDENTAL CONTROL OF ACCESS, CROSSINGS AT GRADE, SOME STREETS NOT ALLOWED TO CROSS; IN GENERAL, ONE-WAY COUPLETS OR SEPARATION BY RAISED MEDIANS. PARKING ALLOWED IF ROADWAY WIDE ENOUGH FOR FOUR MOVING LANES IN ADDITION TO PARKING.

AREAS TO SERVE

REFERRING BACK TO THE 1955 TRAFFIC FLOW MAP (FIGURE 10) AND THE DESIRE LINE CHARTS (FIGURE 12) FROM THE 1946 PORTLAND METROPOLITAN AREA TRAFFIC STUDY, IT INDICATES THAT THERE IS A DEFINITE NEED FOR FREEWAY AND EXPRESSWAY DEVELOPMENT IN NORTHEAST PORTLAND. THIS IS ALREADY BEING ACCOMPLISHED THROUGH THE CONSTRUCTION OF THE T. H. BANFIELD EXPRESSWAY TO FREEWAY STANDARDS. THE SECOND AREA OF INCREASING TRAFFIC GROWTH IS THAT TO THE SOUTHWEST AND WEST ALONG NOT ONLY CANYON ROAD AND SUNSET HIGHWAY (US26), BUT THE PACIFIC HIGHWAY WEST

(US99W) (S.W. BARBUR BOULEVARD). IN THIS AREA THERE IS DEFINITE NEED FOR FUTURE FREEWAY DEVELOPMENT. THE DESIRE LINES, THERE BEING TWO, EXTENDING TO THE EAST AND THE SOUTHEAST BRING OUT THE NEED FOR THE ESTABLISHMENT OF A FREEWAY IN THIS AREA. ANOTHER VERY IMPORTANT DESIRE LINE IS THE NORTH-SOUTH DESIRE LINE ALONG THE GENERAL LOCATION OF N. INTERSTATE AVENUE (US99W) BETWEEN PORTLAND AND VANCOUVER, WASHINGTON--THIS NORTH-SOUTH FLOW HAS A SECONDARY COMPLEMENT ALONG A NORTH-SOUTH LINE AT APPROXIMATELY N.E. AND S.E. 30TH AVENUE WHICH ACCOMMODATES BOTH THRU AND LOCAL TRAFFIC FLOW. A LESSER DESIRE LINE COMPOSED PREDOMINATELY OF COMMERCIAL VEHICLES BUT INCLUDING SUFFICIENT PASSENGER CARS IN THE STREAM TO POINT OUT ITS IMPORTANCE, IS THAT APPROXIMATING N.E. AND S.E. 82ND AVENUE.

TABLE IV

CHARACTERISTICS OF URBAN ARTERIAL HIGHWAYS
MINIMUM OF FOUR LANES

DESIGN AND CONTROL FEATURES	MAJOR STREET	EXPRESSWAY	FREEWAY
TYPES OF VEHICLES	ALL	ALL	ALL
CONTROL OF ACCESS	USUALLY NONE	FULL OR PARTIAL	FULL
MINOR CROSS STREETS	AT GRADE OR CLOSED	TERMINATED	TERMINATED
MAJOR CROSS STREETS	AT GRADE	PREFERABLY SEPARATED; SOME AT GRADE	ALL SEPARATED
CONTROL OF CROSS AND TURNING TRAFFIC AT GRADE	STOP SIGNS OR TRAFFIC SIGNALS	PREFERABLY STOP SIGNS; SOME TRAFFIC SIGNALS	ALL SEPARATED
PRIVATE DRIVEWAYS CONNECTING TO THROUGH LANES	RESTRICTED; SOME RIGHT TURNS ONLY	NONE OR FEW	NONE
ACCESS CONNECTION TREATMENT	NORMAL OR FLARED	CHANNELIZED OR RAMP TERMINAL	RAMP TERMINAL
FRONTAGE ROADS OR EQUIVALENT	USUALLY NONE	WHERE NEEDED	WHERE NEEDED
MEDIAN	INCLUDED OR ONE-WAY STREETS	INCLUDED	INCLUDED
PEDESTRIAN CROSSINGS	CROSSWALKS	CROSSWALKS OR SEPARATED	ALL SEPARATED
PARALLEL CURB PARKING	RESTRICTED OR ELIMINATED WHERE FEASIBLE	ELIMINATED	ELIMINATED
SHOULDERS	SELDOM APPLICABLE	INCLUDED	INCLUDED

THESE DESIRE LINES, COUPLED WITH A STUDY OF POTENTIAL TRAFFIC LOAD THAT WOULD BE SHOWN WITH A TRAFFIC PROJECTION FACTOR OF 2.00 TO 2.50 FOR 1975, POINTS OUT, WHEN STUDYING THE WILLAMETTE RIVER CROSSINGS, THE POTENTIALS THAT WILL EXIST IN TRAFFIC DEMANDS IN 20 YEARS. THE DEVELOPMENT OF A SYSTEM OF MAJOR STREETS, EXPRESSWAYS, AND FREEWAYS FOR THE PORTLAND METROPOLITAN AREA BASED ON THE NEEDS OF 1975, INDICATES THAT THERE WILL BE 544,000 VEHICLES PER DAY DESIRING TO MOVE ACROSS THE WILLAMETTE RIVER AT POINTS BETWEEN OREGON CITY AND ST. JOHNS. IN ADDITION TO THE EXISTING BRIDGES, THE PLAN AS PRESENTLY PRESENTED CONTEMPLATES FIVE ADDITIONAL STRUCTURES AND THAT ADDITIONAL WIDTH WILL BE PROVIDED ON TWO OF THE EXISTING STRUCTURES. BECAUSE OF THE PROVISION OF ADDITIONAL FACILITIES, CERTAIN INCREMENTS OF TRAFFIC NOT NOW USING THE BRIDGES WILL BE GENERATED AND DEVELOPED.

IT IS PLANNED THAT 64 LANES OF TRANS-RIVER TRAFFIC FOR 544,000 VEHICLES PER DAY WILL BE AVAILABLE IN 1975 AS COMPARED TO 33 LANES OF TRAFFIC AND 247,200 VEHICLES PER DAY USING THE PRESENT NINE RIVER CROSSINGS IN 1954. WHEN THESE ADDITIONAL BRIDGES, PROPOSED IN THE FUTURE PROGRAM, ARE CONSTRUCTED, THEY WILL PROVIDE THROUGH THEIR 64 LANES A CAPACITY OF 675,500 VEHICLES PER DAY. NORMAL GROWTH IS SUCH THAT ALL BUT THE ST. JOHNS BRIDGE WILL BE DEFICIENT IN CAPACITY UNLESS ADDITIONAL WILLAMETTE RIVER BRIDGES ARE CONSTRUCTED. WHEN THE FIVE ADDITIONAL BRIDGES ARE COMPLETED, BETTERMENTS TO FIVE EXISTING BRIDGES ARE MADE AND CERTAIN READJUSTMENTS IN TRAFFIC ROUTINGS ARE EFFECTED, THERE WILL BE NO SERIOUS CAPACITY DEFICIENCY IN THE STUDY AREA EXCEPT ON THE BROADWAY BRIDGE.

TABLE V SUMMARIZES THE 1955 AND 1975 USAGE AND CAPACITIES OF NOT ONLY THE NINE EXISTING WILLAMETTE RIVER BRIDGES BUT THE FIVE PROPOSED WILLAMETTE RIVER BRIDGES.

THE CAPACITY OF ANY FACILITY IS DEPENDENT ON THE NUMBER OF TRAFFIC LANES, THE WIDTH OF THE LANES, THE DISTANCE FROM THE EDGE OF OUTSIDE LANES TO VERTICAL OBSTRUCTIONS (SUCH AS CURBS OR TRUSSES), THE LANE ARRANGEMENT, THE POSSIBILITY OF UNBALANCED FLOW THROUGH REVERSIBLE LANES, THE TERMINAL INTERSECTIONS OR RAMPS, THE NUMBER OF COMMERCIAL VEHICLES IN THE TRAFFIC STREAM, THE PERCENTAGE OF TOTAL FLOW BY DIRECTIONS DURING THE PEAK HOUR, AND THE VOLUME OF PEAK HOUR TRAFFIC WITH RESPECT TO THE ADT. SINCE THESE FACTORS VARY FROM ONE LOCATION TO ANOTHER, THE CAPACITIES SHOWN IN TABLE V ARE NOT PRECISELY PROPORTIONAL TO THE NUMBER OF LANES ON EACH STRUCTURE. FOR EXAMPLE, THE BURNSIDE BRIDGE HAS A 1955 CAPACITY OF 36,000 AND A 1975 CAPACITY OF 67,000. THIS INCREASE RESULTS FROM THE PROPOSED RAMPS AT BOTH ENDS OF THE BRIDGE. UNTIL THE RAMPS ARE COMPLETED, THE CAPACITY IS DEPENDENT ON THE INTERSECTIONS AT THE ENDS OF THE BRIDGE. THE 1975 CAPACITY OF 67,000 IS LESS THAN THE 1975 CAPACITY OF THE NEW MORRISON BRIDGE, ALTHOUGH BOTH HAVE SIX LANES AND BOTH CAN BE OPERATED WITH FOUR LANES FOR THE HEAVIER DIRECTION DURING THE PEAK HOUR. THIS DIFFERENCE RESULTS FROM THE

GREATER WIDTH OF THE PROPOSED MORRISON BRIDGE.

THE BROADWAY BRIDGE HAS A LOW CAPACITY BECAUSE OF THE TRAFFIC SIGNALS AT THE INTERSECTION OF THE LOVEJOY AND BROADWAY RAMPS, AND THE LOW 1955 CAPACITY ON THE ROSS ISLAND BRIDGE RESULTS FROM THE NARROW LANE WIDTH. PROPOSED WIDENING WILL INCREASE THE CAPACITY TO 40,000 VEHICLES PER DAY IN 1975.

OTHER VARIATIONS BETWEEN BRIDGES WITH EQUAL NUMBERS OF LANES CAN BE EXPLAINED BY THEIR LANE WIDTH AND ARRANGEMENT OR BY THEIR TRAFFIC PATTERN.

TABLE V

TRANS-WILLAMETTE RIVER TRAFFIC

	1955			1975						
EXISTING BRIDGES	A.D.T.	NO. OF LANES	CAPACITY	EST. A.D.T. 1/	NO. OF LANES	CAPACITY	REQ. ADD. LANES	REDISTRIBUTED A.D.T.2/	CAPACITY	REQ. ADD. LANES
ST. JOHNS	13,500	4	35,000	27,000	4	35,000	9	30,000	35,000	0
BROADWAY	41,000	4	34,000	82,000	4	34,000	4	50,000	34,000	2
STEEL	42,700	4	42,000	85,400	6	61,000	2	55,000	61,000	0
BURNSIDE	41,000	6	36,000	82,000	6	67,000	2	70,000	67,000	0
MORRISON	22,500	3	20,000	45,000	6	80,000	0	50,000	80,000	0
HAWTHORNE	28,500	4	33,000	57,000	4	33,000	2	30,000	33,000	0
ROSS ISLAND	37,500	4	33,000	75,000	4	40,000	2	45,000	40,000	0
SELLWOOD	11,000	2	9,500	22,000	2	9,500	2	10,000	9,500	0
OREGON CITY-WEST LINN	9,500	2	9,000	17,000	2	9,000	2	9,000	9,000	0
TOTAL	247,200	33	251,500	494,000	38	368,500	16	349,000	368,500	2
PROPOSED BRIDGES										
FREMONT					8			80,000	95,000	0
MT. HOOD					6			65,000	80,000	0
SELLWOOD					4			30,000	44,000	0
OSWEGO					4			10,000	44,000	0
OREGON CITY-WEST LINN					4			10,000	44,000	0
TOTAL					26			195,000	307,000	0
GRAND TOTAL					64			544,000	675,500	2

1/ NORMAL GROWTH WITHOUT FREEWAY-EXPRESSWAY SYSTEM.
2/ TRAFFIC PROJECTION WITH FREEWAY-EXPRESSWAY SYSTEM.

THE FREEWAY-EXPRESSWAY SYSTEM

THE FOREGOING DATA STATE THE NEED FOR A PLAN, THE TYPE OF PLAN NEEDED AND OTHER RELATED DATA. THE OVER-ALL SYSTEM CAN BE BEST SUMMARIZED BY ENUMERATING THE SEVERAL PROJECTS RECOMMENDED AND BY REFERENCE TO FIGURE 13.

FREEWAYS

	NAME	SECTION
F1	BANFIELD, US30	WILLAMETTE RIVER - FAIRVIEW
F2	HARBOR DRIVE, US99	STEEL BRIDGE - PORTLAND-SALEM FREEWAY
F3	PORTLAND-SALEM, US99	HARBOR DRIVE FREEWAY - TUALATIN RIVER
F4	MT. HOOD, US26	HARBOR DRIVE FREEWAY - LINNEMAN JUNCTION
F5	SUNSET, US26	WHEELER AVENUE - HARBOR DRIVE FREEWAY
F6	INDUSTRIAL, US30	ST. JOHNS BRIDGE - STEEL BRIDGE
F7	DELAWARE, US99	VANCOUVER, WN. - HARBOR DRIVE FREEWAY
F8	STADIUM, ALTERNATE US99-US30	SUNSET FREEWAY - FREMONT FREEWAY
F9	FREMONT, ALTERNATE US30	STADIUM FREEWAY - BANFIELD FREEWAY
F10	LAURELHURST, ALTERNATE US99	COLUMBIA RIVER - PORTLAND-SALEM FREEWAY
F11	EAST BANK	HARBOR DRIVE FREEWAY - MT. HOOD FREEWAY
F12	CASCADE, ORE213	MARINE DRIVE - OREGON CITY
F13	SELLWOOD	PORTLAND-SALEM FREEWAY - LAURELHURST FREEWAY
F14	GLENCULLEN	BARBUR BOULEVARD - BEAVERTON-HILLSDALE HIGHWAY

EXPRESSWAYS

E1	MCLOUGHLIN, US99E	STEPHENS-UNION-GRAND AVENUES - REEDWAY ST.
E2	MT. HOOD, US26	LINNEMAN JUNCTION - SANDY
E3	EASTSIDE	MULTNOMAH ST. - MCLOUGHLIN EXPRESSWAY
E4	INDUSTRIAL, US30	BURLINGTON - ST. JOHNS BRIDGE
E5	OREGON CITY BRIDGE, ORE43	WEST LINN - OREGON CITY
E6	WATER ST., US99E	GLADSTONE - 10TH ST. (OREGON CITY)
E7	MULTNOMAH	CEDAR HILLS-TUALATIN EXPRESSWAY - PORTLAND-SALEM FREEWAY
E8	COLUMBIA, US30 BYPASS	ST. JOHNS BRIDGE - 122ND AVE.
E9	BARNES ROAD	SUNSET FREEWAY - STADIUM FREEWAY
E10	JOHNSON CREEK	LAURELHURST FREEWAY - MT. HOOD FREEWAY
E11	HILLSBORO	WHEELER AVENUE - SUNSET FREEWAY
E12	CEDAR HILLS-TUALATIN	SUNSET FREEWAY - PORTLAND-SALEM FREEWAY
E13	OATFIELD ROAD	LAURELHURST FREEWAY - CASCADE FREEWAY
E14	SUNSET-ST. JOHNS	SUNSET FREEWAY - INDUSTRIAL FREEWAY

MAJOR STREETS

	NAME	SECTION
M1	BARBUR BOULEVARD	BERTHA BLVD. - TIGARD
M2	UNION-GRAND AVE. COUPLET, US99E	LOMBARD ST. - DIVISION ST.
M3	BEAVERTON-HILLSDALE HIGHWAY, ORE10, AND BERTHA BLVD.	BEAVERTON - BARBUR BLVD.
M4	MACADAM STREET, ORE43	HAMILTON ST. - SELLWOOD BRIDGE
M5	MORRISON BRIDGE AND MORRISON-BELMONT ST. COUPLET	HARBOR DRIVE FREEWAY - 39TH AVENUE
M6	HAWTHORNE BRIDGE APPROACH AND HAWTHORNE-MADISON ST. COUPLET	WILLAMETTE RIVER - 50TH AVENUE
M7	DIVISION STREET	21ST AVE. - POWELL VALLEY RD.
M8	82ND AVENUE	SANDY BLVD. - DUKE ST.
M9	TUALATIN VALLEY HIGHWAY, ORE6	REEDVILLE - MULTNOMAH CO. LINE
M10	122ND AVENUE	SANDY BLVD. - JOHNSON CREEK EXPRESSWAY
M11	E. BURNSIDE STREET	UNION AVE. - GRESHAM ROAD
M12	HALSEY STREET	BANFIELD FREEWAY - 122ND AVE.
M13	MCLOUGHLIN BOULEVARD, US99E	MILWAUKIE - GLADSTONE
M14	POWELL BLVD. - FOSTER ROAD	PORTLAND-SALEM FREEWAY - 82ND AVE.
M15	15TH-16TH AVENUE COUPLET	LOMBARD ST. - MULTNOMAH ST.
M16	OSWEGO HIGHWAY, ORE43	SELLWOOD BRIDGE - WEST LINN
M17	POWELL VALLEY ROAD	82ND AVE. - GRESHAM
M18	SCHOLLS FERRY HIGHWAY, ORE210	RALEIGH HILLS - PROGRESS
M19	CORNELL ROAD	SUNSET FREEWAY - STADIUM FREEWAY
M20	LAKE ROAD	LAURELHURST FREEWAY - CASCADE FREEWAY
M21	CLACKAMAS HIGHWAY, ORE212	CLACKAMAS CUTOFF - CARVER
M22	GRESHAM ROAD	FAIRVIEW - GRESHAM
M23	SANDY BOULEVARD, US30 BYPASS	122ND AVE. - FAIRVIEW
M24	162ND AVENUE	SANDY BLVD. - POWELL VALLEY ROAD

THIS SYSTEM OF FREEWAYS WAS DESIGNED TO ACCOMMODATE THE DESIRE FOR MOVEMENT, THE EXISTING TRAFFIC FLOW AND AT THE SAME TIME TO CARE FOR NEIGHBORHOOD DEVELOPMENT AND IMPROVEMENT.

THE SYSTEM OF EXPRESSWAYS FURTHER COMPLEMENTS THE FREEWAY SYSTEM BY INTEGRATING ADDITIONAL GRIDIRON ROUTES AND SOME RADIAL ROUTES INTO THE FOREGOING SYSTEM. THE EXPRESSWAY SYSTEM IS FURTHER COMPLEMENTED BY THE IMPROVEMENT OF MINIMUM NUMBER OF MAJOR STREETS, SUCH MAJOR STREETS GIVING SUFFICIENT LEVEL OF TRAFFIC SERVICE AND BEING IN SUFFICIENTLY CLOSE PROXIMITY TO FREEWAYS OR EXPRESSWAYS TO OBVIATE THE NEED FOR A HIGHER LEVEL OF DESIGN. GENERALLY SPEAKING, THE MAJOR STREET SYSTEM COMPLEMENTS THE EXISTING APPROACHES TO THE WILLAMETTE RIVER BRIDGES IN THE CENTRAL EAST SIDE AREA AND CARES FOR SOME OF THE IMPORTANT NORTH-SOUTH ONE-WAY COUPLET ROUTINGS.

A DETAILED SUMMARY OF COST AS WELL AS OTHER

FIGURE 13
PROPOSED PLAN 1975

LEGEND

TYPE OF FACILTY	COMPLETED OR PROGRAMMED 1955	PROPOSED
FREEWAYS		
EXPRESSWAYS		
MAJOR STREETS		

FIGURE 13
PROPOSED PLAN 1975

LEGEND

TYPE OF FACILTY	COMPLETED OR PROGRAMMED 1955	PROPOSED
FREEWAYS		
EXPRESSWAYS		
MAJOR STREETS	———	- - -

VANCOUVER
COLUMBIA RIVER
PORTLAND
WILLAMETTE RIVER
FAIRVIEW
TROUTDALE
WOOD VILLAGE
SANDY RIVER
GRESHAM
MULTNOMAH CO.
CLACKAMAS CO.
BEAVERTON
WASHINGTON CO.
MULTNOMAH CO.
MILWAUKIE
OSWEGO
Lake Oswego
GLADSTONE
CLACKAMAS RIVER
TUALATIN
WEST LINN
OREGON CITY

FIGURE 13
PROPOSED PLAN 1975

LEGEND

TYPE OF FACILTY	COMPLETED OR PROGRAMMED 1955	PROPOSED
FREEWAYS	———	– – –
EXPRESSWAYS	———	– – –
MAJOR STREETS	———	– – –

VANCOUVER
COLUMBIA RIVER
PORTLAND
WILLAMETTE RIVER
FAIRVIEW
TROUTDALE
WOOD VILLAGE
GRESHAM
SANDY RIVER
BEAVERTON
TUALATIN
OSWEGO
Lake Oswego
MILWAUKIE
GLADSTONE
WEST LINN
OREGON CITY
CLACKAMAS RIVER
MULTNOMAH CO.
CLACKAMAS CO.
WASHINGTON
MULTNOMAH

FIGURE 13
PROPOSED PLAN 1975

LEGEND

TYPE OF FACILTY	COMPLETED OR PROGRAMMED 1955	PROPOSED
FREEWAYS		
EXPRESSWAYS		
MAJOR STREETS		

VANCOUVER
COLUMBIA RIVER
PORTLAND
WILLAMETTE RIVER
FAIRVIEW
TROUTDALE
WOOD VILLAGE
SANDY RIVER
GRESHAM
BEAVERTON
WASHINGTON CO.
MULTNOMAH CO.
MILWAUKIE
OSWEGO
Lake Oswego
GLADSTONE
CLACKAMAS RIVER
TUALATIN
WEST LINN
OREGON CITY
MULTNOMAH CO.
CLACKAMAS CO.

PERTINENT DATA RELATING NOT ONLY TO THE THREE MAJOR TYPES OF PROJECTS BUT TO EACH INDIVIDUAL PROJECT IS CONTAINED HEREINAFTER.

BENEFITS REALIZED FROM FREEWAY-EXPRESSWAY SYSTEM

THE VEHICLE TIME ZONES SHOWN IN FIGURE 14 PORTRAY THE AVERAGE TIME REQUIRED TO MAKE A ONE-WAY TRIP FROM THE INTERSECTION OF FOURTH AVENUE AND MORRISON STREET TO ANY POINT IN THE STUDY AREA. THIS ILLUSTRATION SHOWS BOTH PRESENT DAY AND FUTURE CONGESTION ON THE PRESENT ARTERIAL SYSTEM AS REFLECTED IN DRIVING TIME AS WELL AS TIME ZONES AS THAN WOULD EXIST IF THE FREEWAY-EXPRESSWAY SYSTEM WERE CONSTRUCTED. CONSIDERABLE DATA WERE AVAILABLE FROM TECHNICAL REPORT NO. 49-2 "1946 - PORTLAND METROPOLITAN AREA TRAFFIC SURVEY," AND FROM THE FILES OF THE STATE SPEED CONTROL BOARD AND WERE USED IN THIS ANALYSIS.

IN THE CASE OF PROPOSED FREEWAYS AND EXPRESSWAYS, SPEEDS WERE ASSUMED ON THE BASIS OF THE DESIGN SPEED, AND KNOWN CHARACTERISTICS OF EXISTING FACILITIES OF THE SAME TYPE. SPEEDS FOR THE VARIOUS STREETS IN 1975 WERE BASED ON 1955 SPEEDS REDUCED IN ACCORDANCE WITH THE RESULTS OF VOLUME-SPEED STUDIES CONDUCTED BY THE BUREAU OF PUBLIC ROADS.1/ THESE STUDIES SHOWED A MARKED RELATIONSHIP BETWEEN VEHICLE VOLUMES AND VEHICLE SPEEDS, AND ARE BELIEVED TO BE THE BEST AVAILABLE SOURCES OF INFORMATION FOR THIS PURPOSE.

.THE TIME ZONE CONTOURS ON THE BASE MAP IN FIGURE 14 SHOW AVERAGE TIMES UNDER EXISTING 1955 TRAFFIC VOLUMES. THE FIRST OVERLAY IN FIGURE 14 SHOWS TIME ZONES FOR 1975 ASSUMING NO FURTHER CONSTRUCTION OF FREEWAYS OR EXPRESSWAYS IN THE AREA. THE SECOND OVERLAY IN FIGURE 14 SHOWS TIME ZONES FOR 1975 ASSUMING THAT THE PROPOSED FREEWAY-EXPRESSWAY SYSTEM WAS COMPLETED.

THE ECONOMIC BENEFITS WHICH WOULD ACCRUE TO THE PORTLAND AREA FROM THE FREEWAY SYSTEM ALONE WOULD EASILY JUSTIFY THE COST OF THE SYSTEM. THE DIRECT BENEFITS ALONE WOULD VERY CONSERVATIVELY EXCEED THE COST OF THE SYSTEM BY AT LEAST $91,000,000.

AN ECONOMIC JUSTIFICATION FOR THE LOS ANGELES METROPOLITAN FREEWAYS HAS BEEN DEVELOPED AND APPEARED IN SOME DETAIL IN AN ARTICLE ENTITLED "SAFER HIGHWAYS" IN THE JANUARY-FEBRUARY, 1955, ISSUE OF "CALIFORNIA HIGHWAYS AND PUBLIC WORKS." THE AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA IN PREPARING THE ARTICLE REPORTED THAT THERE IS AN INDICATED SAVINGS OF 4.2 CENTS PER VEHICLE MILE WHEN FREEWAYS ARE USED. ANOTHER STUDY; "ECONOMY OF FREEWAYS" BY L. W. GARDNER OF THE CITY OF LOS ANGELES, REPORTED IN THE DECEMBER, 1953, ISSUE OF "TRAFFIC ENGINEERING," DEVELOPED A "CONSERVATIVE YARDSTICK" OF SAVINGS TO THE MOTORIST DERIVED FROM THE LOS ANGELES FREEWAYS. THE RESULTS OF THIS STUDY INDICATED MINIMUM BENEFITS OF TWO CENTS PER VEHICLE MILE. IN THIS LATTER STUDY, THE HEAVILY USED FREEWAYS IN THE MORE CONGESTED URBAN AREAS WERE FOUND TO PAY FOR THEMSELVES FASTER THAN THE FREEWAYS IN THE LESS CONGESTED

1/ HIGHWAY CAPACITY MANUAL, U. S. DEPARTMENT OF COMERCE, BUREAU OF PUBLIC ROADS, WASHINGTON 25, D. C.

FIGURE 14

1955 TIME ZONE CONTOUR —10—

1975 TIME ZONE CONTOUR
NO STREET IMPROVEMENT

1975 TIME ZONE CONTOUR
WITH PROGRAM COMPLETED

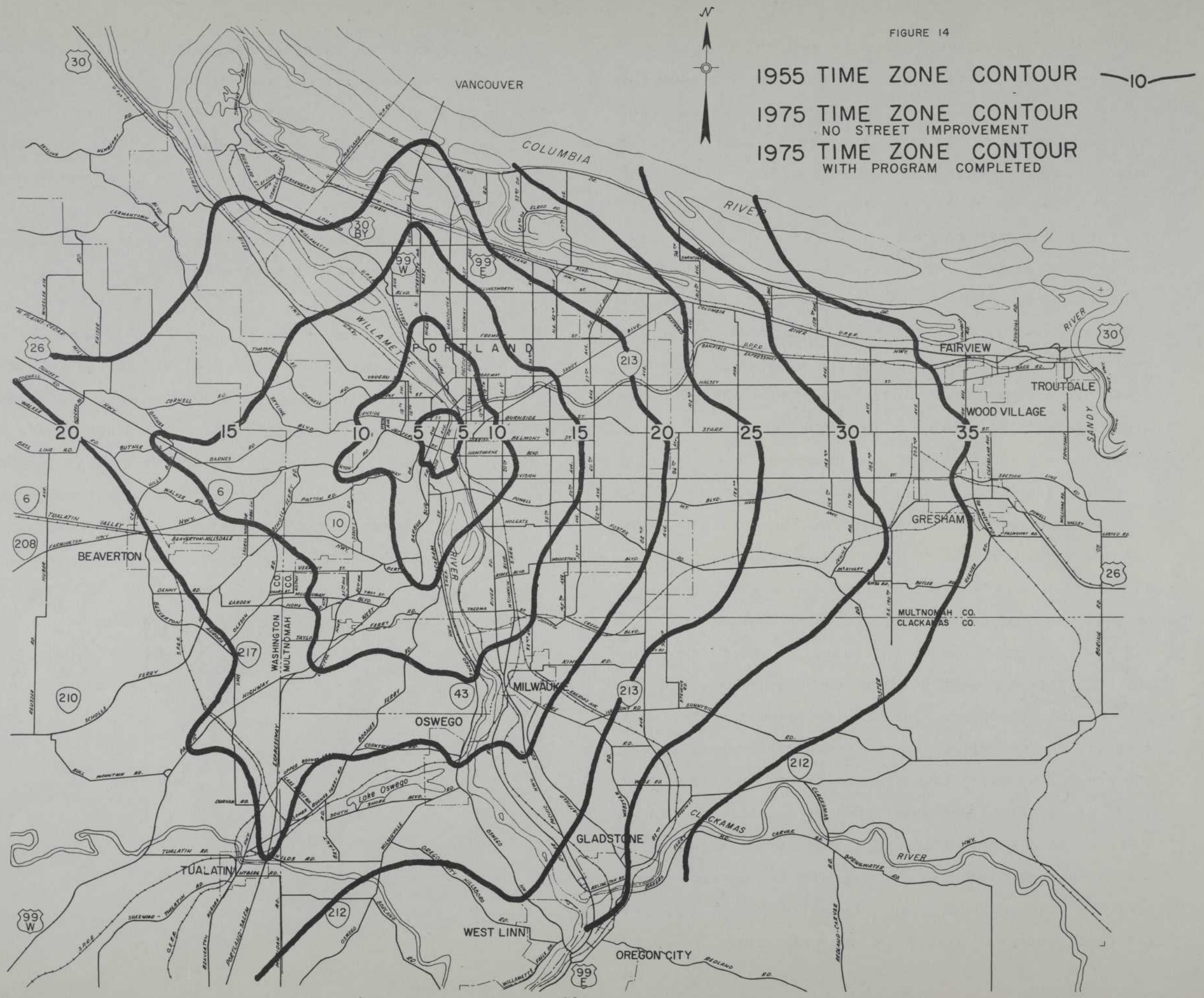


FIGURE 14

1955 TIME ZONE CONTOUR —10—

1975 TIME ZONE CONTOUR —10—
NO STREET IMPROVEMENT

1975 TIME ZONE CONTOUR
WITH PROGRAM COMPLETED

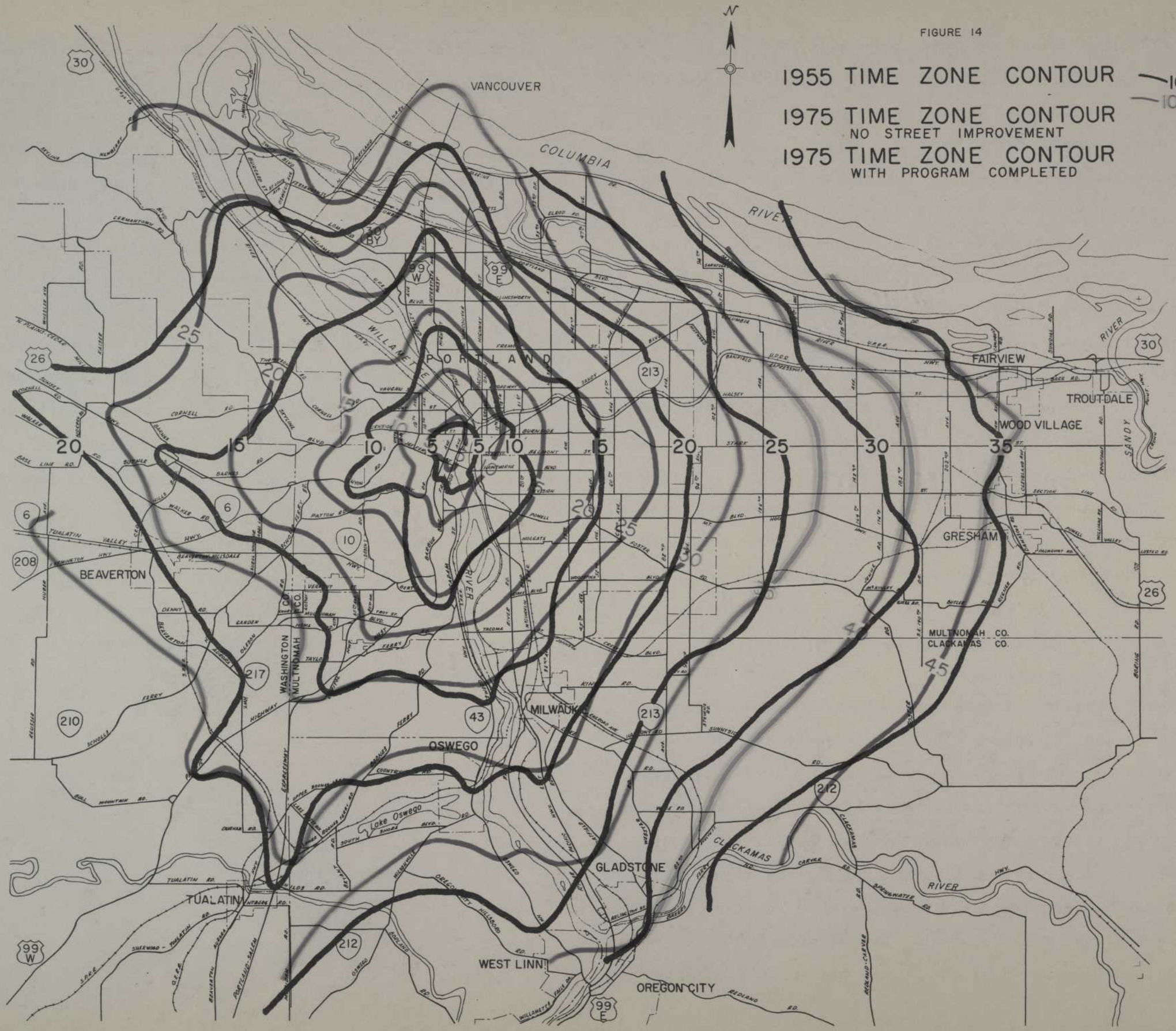
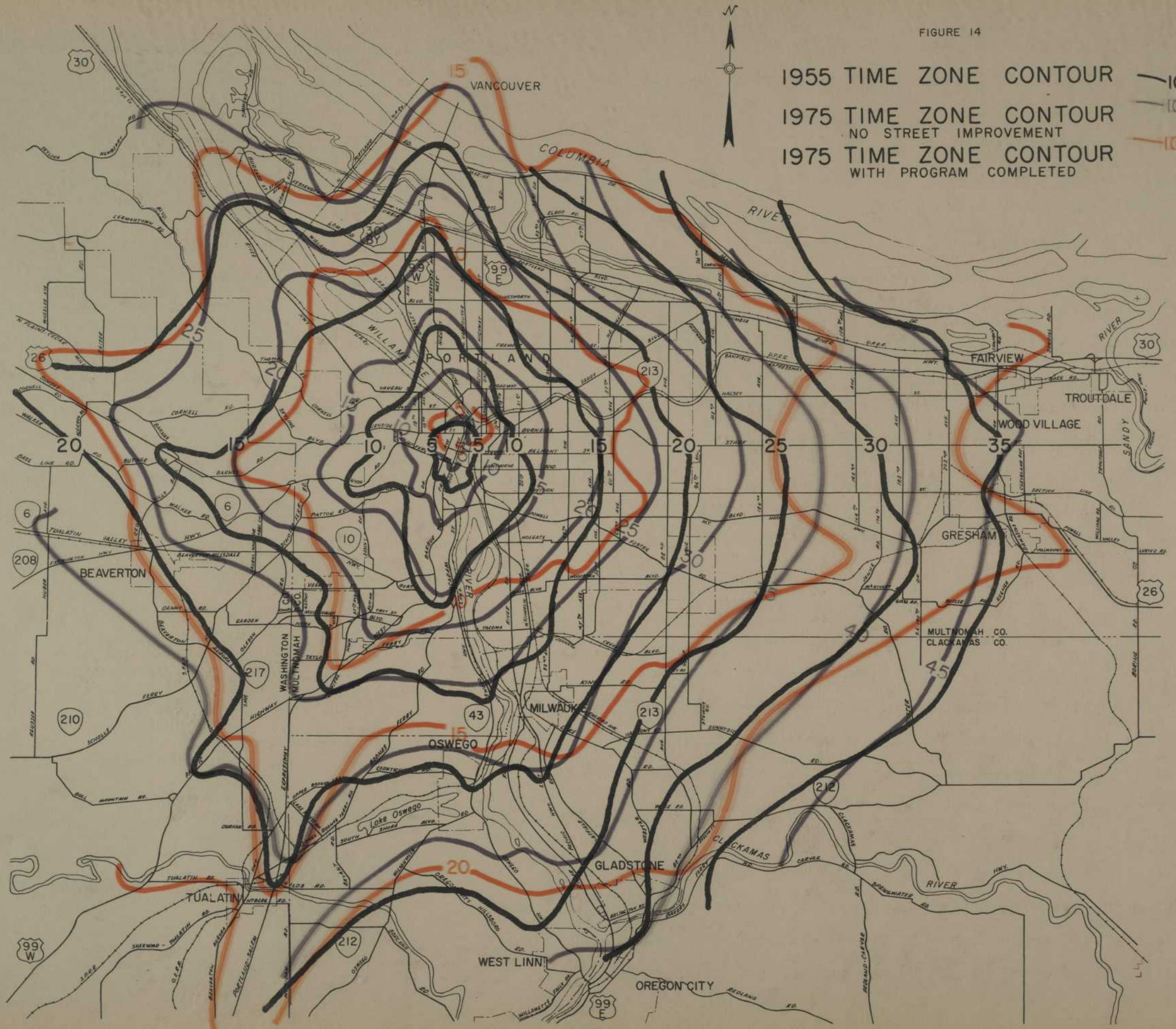


FIGURE 14

1955 TIME ZONE CONTOUR —10—

1975 TIME ZONE CONTOUR
NO STREET IMPROVEMENT —10—

1975 TIME ZONE CONTOUR
WITH PROGRAM COMPLETED —10—



AREAS, EVEN THOUGH THEY WERE MUCH MORE COSTLY.

THE ACTUAL DIRECT BENEFITS DERIVED FROM THE PROPOSED PORTLAND FREEWAY SYSTEM WOULD PROBABLY FALL SOMEWHERE BETWEEN THE HIGH AND LOW ESTIMATES OF 4.2 CENTS AND 2.0 CENTS PER VEHICLE MILE. DURING THE TWENTY YEAR PERIOD, 1955-1975, THE FREEWAY SYSTEM AS PROPOSED FOR THE PORTLAND AREA WOULD DEVELOP SOME 762,000,000 AVERAGE ANNUAL VEHICLE MILES. THIS AMOUNTS TO AN AVERAGE ANNUAL BENEFIT OF $18,300,000 AT 2.0 CENTS PER VEHICLE MILE AND $38,430,000 ON BASIS OF 4.2 CENTS PER VEHICLE MILE. USING THE HIGH BENEFIT OF 4.2 CENTS PER VEHICLE MILE, TOTAL SAVINGS OF $768,000,000 WOULD BE REALIZED BY 1975. THIS COMPARES WITH A LOW OF $366,000,000 BASED ON THE 2.0 CENTS PER VEHICLE MILE BENEFIT. THESE BENEFITS WHEN CONTRASTED WITH THE TOTAL COST OF $275,000,000 FOR PROVIDING THE FREEWAY SYSTEM FOR THE PORTLAND AREA GIVE AN INTERESTING COMPARISON. IT SHOWS THAT THERE WILL BE HIGH AND LOW NET BENEFITS OF $493,000,000 AND $91,000,000, RESPECTIVELY.

IN ADDITION TO THE DIRECT BENEFITS FROM REDUCED OPERATING COSTS, WHICH INCLUDE ACCIDENT REDUCTION, TIME SAVING, ET CETERA, THAT CAN BE EVALUATED AS DIRECT BENEFITS AND DEFINITELY GIVEN ON TERMS OF MONETARY SAVING FOR THE MOTORIST USING THE FREEWAYS, THERE ARE MANY INDIRECT BENEFITS THAT SHOULD NOT BE OVERLOOKED. THESE BENEFITS ACCRUE TO THE GENERAL CITIZENRY OF A COMMUNITY AND ARE RATHER DIFFICULT TO EVALUATE IN MONETARY TERMS ALTHOUGH NONE THE LESS REAL. AMONG THESE ARE STABILIZATION OF PROPERTY VALUES OR THE ENHANCEMENT THEREOF, RELIEF OF EXISTING OVERBURDENED SURFACED ARTERIES, INCREASING OF THE PRACTICAL RADIUS OF REAL ESTATE DEVELOPMENT ON A TRAVEL TIME BASIS, INCREASED ACCESS FROM RESIDENTIAL NEIGHBORHOODS TO RECREATIONAL OR CULTURAL FACILITIES, INCREASED MOBILITY IN TIME OF DISASTER AND EMERGENCIES, INCREASED TOURIST TRAVEL, REDUCTION OF STRAIN IN DRIVING, AND MANY OTHER ADVANTAGES THAT WOULD NATURALLY ACCRUE FROM A BETTERMENT IN TRANSPORTATION FACILITIES.

THE BENEFITS THAT WOULD ACCRUE TO A LARGE NUMBER OF MOTORISTS WOULD NOT BE ON THE FREEWAY SYSTEM ALONE, BUT WOULD ALSO ACCRUE TO THE EXISTING ARTERIAL STREETS AND TO THE PROPOSED MAJOR STREETS AND EXPRESSWAYS. THE FREEWAY SYSTEMS IN THEMSELVES WILL TAKE SUFFICIENT TRAFFIC FROM THE EXISTING SURFACED STREETS SO THAT THEY CAN SERVE THE MOTORIST MORE EFFICIENTLY AND BECAUSE OF THE REDUCTION IN CONGESTION, ACCIDENT FREQUENCY WILL BE DECREASED AND STRAIN OF DRIVING WILL BE LESSENED; THUS THESE INDIRECT BENEFITS ARE MANY.

GENERALLY, IT CAN BE SAID THAT THE FREEWAY SYSTEM IS THE "BACKBONE" OF THE OVER-ALL PROGRAM AND SATISFIES THE BASIC TRAFFIC PATTERNS AS EVIDENCED BY THE DESIRE LINES IN FIGURE 12. THE EXPRESSWAY SYSTEM COMPLEMENTS THE FREEWAY SYSTEM WHILE THE MAJOR STREET SYSTEM INTER-TIES THE FREEWAYS AND EXPRESSWAYS WITH OTHER ARTERIAL STREETS.

THE FINAL LOCATION OF THE PORTLAND EXPOSITION-RECREATION CENTER HAS NOT BEEN DECIDED AND THEREFORE SOME CHANGES MAY BE NECESSARY TO CONFORM TO THE PROPOSED TRAFFIC PATTERN THAT WOULD BE CREATED BY SUCH A CENTER AFTER THE SELECTION IS MADE. THE TIME PERIOD WITHIN WHICH THIS REPORT WAS PREPARED DID NOT ALLOW DETAILED INVESTIGATION OF POTENTIAL LAND DEVELOPMENT IN CERTAIN AREAS--SCHOOL DEVELOPMENT, PARK DEVELOPMENT, SUB-DIVISION, ET CETERA. IT HAS QUITE RECENTLY BEEN DETERMINED THAT THERE ARE SOME AREAS WITHIN WHICH FREEWAYS OR EXPRESSWAYS HAVE BEEN LOCATED WHICH, BY REASON OF PROPOSED DEVELOPMENT, WILL NECESSITATE RELOCATION OF THE HIGHWAYS WHEN FINAL SURVEYS ARE MADE AND BEFORE THE LOCATION CAN BE ADOPTED.

THE TOTAL PROGRAM (FREEWAYS, EXPRESSWAYS, AND MAJOR STREETS) COSTS $371,045,000. OF THIS AMOUNT FUNDS FOR FINANCING $40,000,000 OF PROJECTS HAVE BEEN PROVIDED OR WILL BE AVAILABLE WITHIN THE NEXT TWO YEARS. THERE ARE A TOTAL OF 291 MILES OF IMPROVEMENT IN THIS PROGRAM. IT IS SUMMARIZED AS FOLLOWS:

TYPE OF WORK	NO. MILES	ANNUAL VEHICLE MILES	COST
FREEWAYS	96.16	1,059,155,000	$274,975,000
EXPRESSWAYS	74.06	330,410,000	52,690,000
MAJOR STREETS	120.65	648,117,000	43,380,000
TOTAL	290.87	2,037,682,000	$371,045,000

COST ESTIMATES FOR THE FREEWAY SYSTEM WERE BASED ON FIELD AND OFFICE RECONNAISSANCE FOR THE PURPOSE OF DETERMINING LOCATION AND DESIGN. PRELIMINARY PLAN AND PROFILE WERE DEVELOPED FOR EACH PROJECT FROM THESE DATA. FIELD APPRAISALS OF RIGHTS OF WAY WERE ALSO OBTAINED.

WITH RESPECT THE EXPRESSWAY SYSTEM, A FIELD AND OFFICE RECONNAISSANCE FOR LOCATIONS WAS UTILIZED IN THE DEVELOPMENT OF THE PRELIMINARY PLAN. AVERAGE UNIT COSTS FOR CONSTRUCTION AND RIGHT OF WAY WERE USED FOR PURPOSES OF DETERMINING TOTAL COSTS OF THE SEVERAL PROJECTS. HOWEVER, IN THE INSTANCE OF SOME OF THE EXPRESSWAYS, FIELD APPRAISALS OF RIGHTS OF WAY AND DETAILED ESTIMATES WITH RESPECT TO COST WERE AVAILABLE FOR INCLUSION IN THE STUDY.

THE MAJOR STREET SYSTEM HAD ITS COST DEVELOPED PRIMARILY ON THE BASIS OF UNIT COST DATA FROM OTHER COMPARABLE PROJECTS FOR WHICH INFORMATION WAS AVAILABLE. FIELD APPRAISALS WERE OBTAINED FOR RIGHTS OF WAY ON CERTAIN CRITICAL PROJECTS WHERE SUCH COSTS WERE OF CONSIDERABLE MAGNITUDE. ALL OF THE ESTIMATES WERE BASED ON CURRENT COST DATA.

Cost of Freeway Projects

The total cost of the Freeway System is just under $275,000,000. There are a total of 96 miles of freeways proposed in this study. A summary for the 14 freeways is as follows:

Freeway		Length (Miles)	Annual Travel (Veh. Miles)	Total Cost ($)
F1	Banfield	2.54	60,262,000	7,175,000
F2	Harbor Drive	1.29	32,560,000	5,140,000
F3	Portland-Salem	6.61	104,087,000	11,510,000
F4	Mt. Hood	10.11	102,364,000	26,030,000
F5	Sunset	10.56	94,509,000	17,070,000
F6	Industrial	6.44	59,057,000	24,500,000
F7	Delaware	6.00	82,161,000	24,200,000 1/
F8	Stadium	2.41	63,346,000	29,150,000
F9	Fremont	6.21	58,163,000	24,960,000
F10	Laurelhurst	20.83	213,368,000	42,120,000
F11	East Bank	1.86	16,973,000	10,700,000
F12	Cascade	15.12	127,356,000	24,190,000
F13	Sellwood	3.64	31,043,000	9,230,000
F14	Glencullen	2.54	13,906,000	19,000,000
	Total	96.16	1,059,155,000	274,975,000

1/ Includes $14,000,000 for new Interstate Bridges to be paid for through toll collection.

It might be well to reiterate the design characteristics of the Freeway System on which these cost estimates were based. The freeway develops complete control of access, there are no crossings at grade, no left turns, no signals, and no parking. There is uninterrupted flow of traffic entering, leaving, and while traversing the freeway. In the discussion for each freeway project, there is presented in some detail the location, the traffic volumes, type of construction, cost, and the relation of each individual freeway with respect to the total system.

The detail location drawings for the Freeway System do not in every instance reflect final location or design, but rather do they reflect the approximate location and design and were the basis upon which costs of the projects were determined.

Traffic volumes that can be expected on the Freeway System by 1975 are portrayed graphically in Figure 15. Figures 16, 17, 18 and 19 are aerial photographs of Portland on which portions of the Freeway and Expressway System have been superimposed.

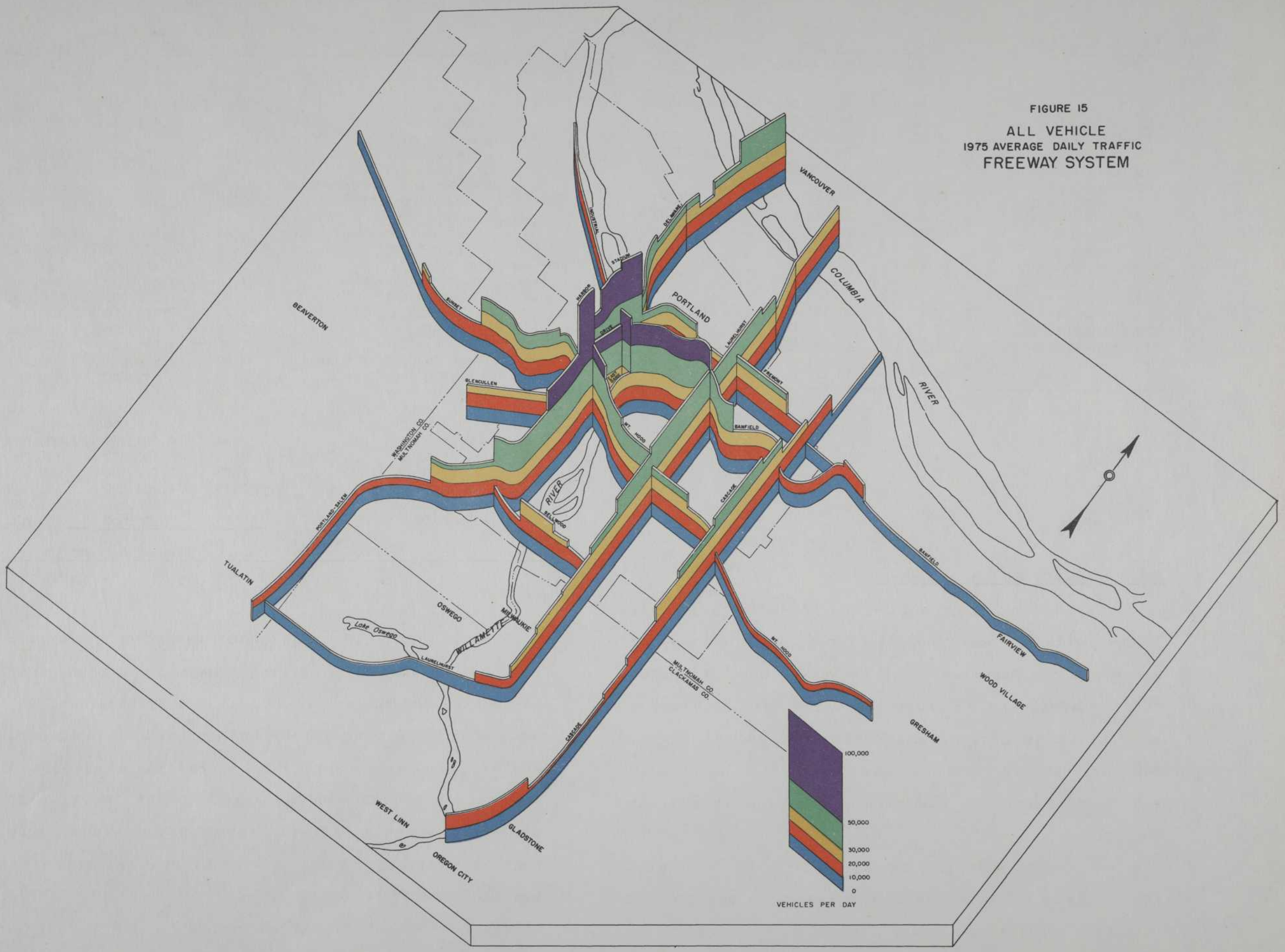
Cost of Expressway Projects

The Expressway System as set forth for the Portland Metropolitan Area has been segregated into some 14 projects which account for 74 miles of total length and would cost some $53,000,000. The Expressway System complements the Freeway System. The Freeway System was so designed to care for the major directional desire lines as discussed previously, while the Expressway System gives a secondary service to these desire lines and interconnects certain of the freeways.

For the purpose of this study, cost estimates on the Expressway System were based on a partial control of access. There were some intersections at grade, but most of them were separated. Left-turn refuges were provided at those intersections at grade as well as signalization at critical locations; however, parking is prohibited on an Expressway. A summary of project costs is as follows:

FIGURE 15

ALL VEHICLE
1975 AVERAGE DAILY TRAFFIC
FREEWAY SYSTEM



	EXPRESSWAY	LENGTH (MILES)	ANNUAL TRAVEL (VEH. MILES)	TOTAL COST ($)
E1	MCLOUGHLIN	2.25	20,531,000	250,000
E2	MT. HOOD	12.00	30,330,000	3,945,000
E3	EASTSIDE	3.90	32,850,000	7,550,000
E4	INDUSTRIAL	4.25	23,269,000	2,800,000
E5	OREGON CITY BRIDGE	0.31	1,132,000	3,500,000
E6	WATER STREET (OREGON CITY)	1.20	9,636,000	200,000
E7	MULTNOMAH	5.30	29,240,000	1,820,000
E8	COLUMBIA	11.70	83,037,000	12,630,000
E9	BARNES	4.50	16,060,000	4,710,000
E10	JOHNSON CREEK	4.70	19,600,000	4,140,000
E11	HILLSBORO	1.25	3,650,000	630,000
E12	CEDAR HILLS-TUALATIN	9.10	30,598,000	4,815,000
E13	OATFIELD	3.10	11,315,000	1,900,000
E14	ST. JOHNS-SUNSET	10.50	19,162,000	3,800,000
	TOTAL	74.06	330,410,000	52,690,000

	MAJOR STREET	LENGTH (MILES)	ANNUAL TRAVEL (VEH. MILES)	TOTAL COST ($)
M1	BARBUR BOULEVARD	4.85	28,744,000	330,000
M2	UNION-GRAND COUPLET	4.87	43,457,000	1,915,000
M3	BEAVERTON-HILLSDALE HWY. & BERTHA BLVD.	7.21	26,316,000	1,595,000
M4	MACADAM STREET	1.85	16,881,000	350,000
M5	MORRISON BRIDGE & MORRISON-BELMONT COUPLET	2.49	30,581,000	13,055,000
M6	HAWTHORNE BRIDGE APPROACH & HAWTHORNE-MADISON COUPLET	2.80	19,600,000	3,435,000
M7	DIVISION STREET	11.72	53,472,000	1,985,000
M8	82ND AVENUE	5.19	36,825,000	195,000
M9	TUALATIN VALLEY HWY.	8.10	32,240,000	1,465,000
M10	122ND AVENUE	5.90	31,500,000	2,205,000
M11	E. BURNSIDE STREET	11.23	77,068,000	2,295,000
M12	HALSEY STREET	1.35	7,884,000	1,315,000
M13	MCLOUGHLIN BLVD.	5.20	37,595,000	200,000
M14	POWELL BLVD.-FOSTER ROAD	4.80	52,560,000	500,000
M15	15TH-16TH AVE. COUPLET	3.10	28,543,000	1,610,000
M16	OSWEGO HIGHWAY	7.90	31,865,000	3,060,000
M17	POWELL VALLEY ROAD	4.10	26,097,000	980,000
M18	SCHOLLS FERRY HWY.	3.50	11,461,000	860,000
M19	CORNELL ROAD	7.14	18,214,000	2,500,000
M20	LAKE ROAD	2.35	8,580,000	475,000
M21	CLACKAMAS HIGHWAY	2.55	3,723,000	575,000
M22	GRESHAM ROAD	3.40	4,964,000	730,000
M23	SANDY BOULEVARD	5.20	12,921,000	850,000
M24	162ND AVENUE	3.85	7,026,000	900,000
	TOTAL	120.65	648,117,000	43,380,000

COST OF MAJOR STREET PROJECTS

THE MAJOR STREET SYSTEM AS PROPOSED IN THIS STUDY INTEGRATES AND COMPLETES THE MOVEMENT OF TRAFFIC FOR WHICH THE FREEWAYS AND EXPRESSWAYS WERE DESIGNED. THE FREEWAYS TEND TO CARRY THE MAJOR LOAD OF TRAFFIC BUT THE MAJOR STREETS ARE FEEDERS TO THE FREEWAYS. THEY ARE FEEDERS TO THE BRIDGES ACROSS THE WILLAMETTE RIVER AND OTHERWISE FUNCTION AS MAJOR DISTRIBUTING ROUTES.

THERE WERE SOME 24 MAJOR STREET PROJECTS STUDIED TOTALING 121 MILES IN LENGTH AND ABOUT $43,000,000 IN COST. THESE PROJECTS ARE SUMMARIZED WS FOLLOWS:

THE MAJOR STREET PROGRAM DESIGN STANDARDS USED CAN BE PHRASED BY SAYING A MAJOR STREET HAS ONLY INCIDENTAL CONTROL OF ACCESS, ALL STREET CROSSINGS ARE AT GRADE, SOME STREETS ARE NOT ALLOWED TO CROSS: IN GENERAL, ONE-WAY COUPLETS OR SEPARATION OF OPPOSING TRAFFIC BY RAISED MEDIANS ARE IN ORDER, PARKING IS GENERALLY ALLOWED IF THE ROADWAY IS WIDE ENOUGH FOR FOUR MOVING LANES, OTHERWISE PARKING IS PROHIBITED. IT WAS ALONG THESE DESIGN STANDARDS THAT THE MAJOR STREET SYSTEM COST ESTIMATES WERE PREPARED.

ONE CHARACTERISTIC OF THE MAJOR STREETS WITH RESPECT TO USAGE IS THAT THE TRAFFIC USAGE IN THE FIRST FIVE OR TEN YEARS OF THE 20-YEAR PROGRAM WOULD BE MUCH HEAVIER THAN IT WOULD IN THE LAST FIVE OR TEN YEARS OF THE OVER-ALL PROGRAM. FOR THE MAJOR STREETS, MANY OF THEM CAN BE IMPROVED FOR A NOMINAL EXPENDITURE AND SUCH SHOULD BE ACCOMPLISHED AT A REASONABLY EARLY DATE PENDING COMPLETION OF THE MORE COSTLY FREEWAYS AND EXPRESSWAYS. AS THE FREEWAYS AND EXPRESSWAYS ARE COMPLETED, THE USAGE OF THE MAJOR STREETS WILL DIMINISH. THIS HAS BEEN BROUGHT OUT ON OCCASION IN THE DISCUSSION WHICH FOLLOWS HEREINAFTER IN THE SECTION TREATING WITH THE PRESENTATION OF THE USAGE, COST, AND LOCATION OF THE INDIVIDUAL MAJOR STREET PROJECTS.

AS WAS MENTIONED PREVIOUSLY, THE SCOPE OF THIS STUDY DOES NOT DEVELOP IN THE SENSE OF PROJECTS THE IMPROVEMENT OF ARTERIAL STREETS. IT IS FELT THAT THE ARTERIAL STREETS WILL DEVELOP AS A MATTER OF NORMAL IMPROVEMENT AND DEVELOPMENT IN A CITY OR COMMUNITY. THERE ARE MANY "KEY PROJECTS" WHICH FALL INTO SUCH CATEGORY BUT ARE NOT INCLUDED HEREIN. AN EXAMPLE OF THESE PROJECTS WOULD BE THE PROPOSED GOODAL-SCHOLLS FERRY ROAD CONNECTION WHICH IN EFFECT WOULD FORM AN INNER CIRCUMFERENTIAL ROUTE CONNECTING NEIGHBORHOODS SUCH AS RALEIGH HILLS, MULTNOMAH AND OSWEGO. ANOTHER IMPORTANT ARTERIAL THAT HAS NOT BEEN INCLUDED AS AN EXTENSION OF AN OUTER CIRCUMFERENTIAL ROUTING IS FROM CARVER TO NEAR GRESHAM THROUGH HAPPY VALLEY AND ROCK CREEK. MARINE DRIVE FROM UNION AVENUE TO TROUTDALE IS A DESIRABLE PROJECT FOR THE SERVICING OF NOT ONLY RECREATIONAL BUT FARM-TO-MARKET TRAFFIC. IT, AS WELL AS OTHERS, HAS NOT BEEN INCLUDED AS TIME DID NOT PERMIT FURTHER STUDY OF SUCH PROJECTS AND DEVELOPING OF COSTS TO IMPROVE THEM. THESE ARE ONLY THREE OF MANY SUCH PROJECTS WHICH COULD BE ENUMERATED THAT WOULD FALL IN THIS CATEGORY.

FIGURE 16

PORTLAND WESTSIDE CENTRAL BUSINESS DISTRICT LOOKING NORTHWEST

FIGURE 17

PORTLAND WESTSIDE CENTRAL BUSINESS DISTRICT LOOKING SOUTH

FIGURE 18

EASTSIDE PORTLAND LOOKING NORTHWEST

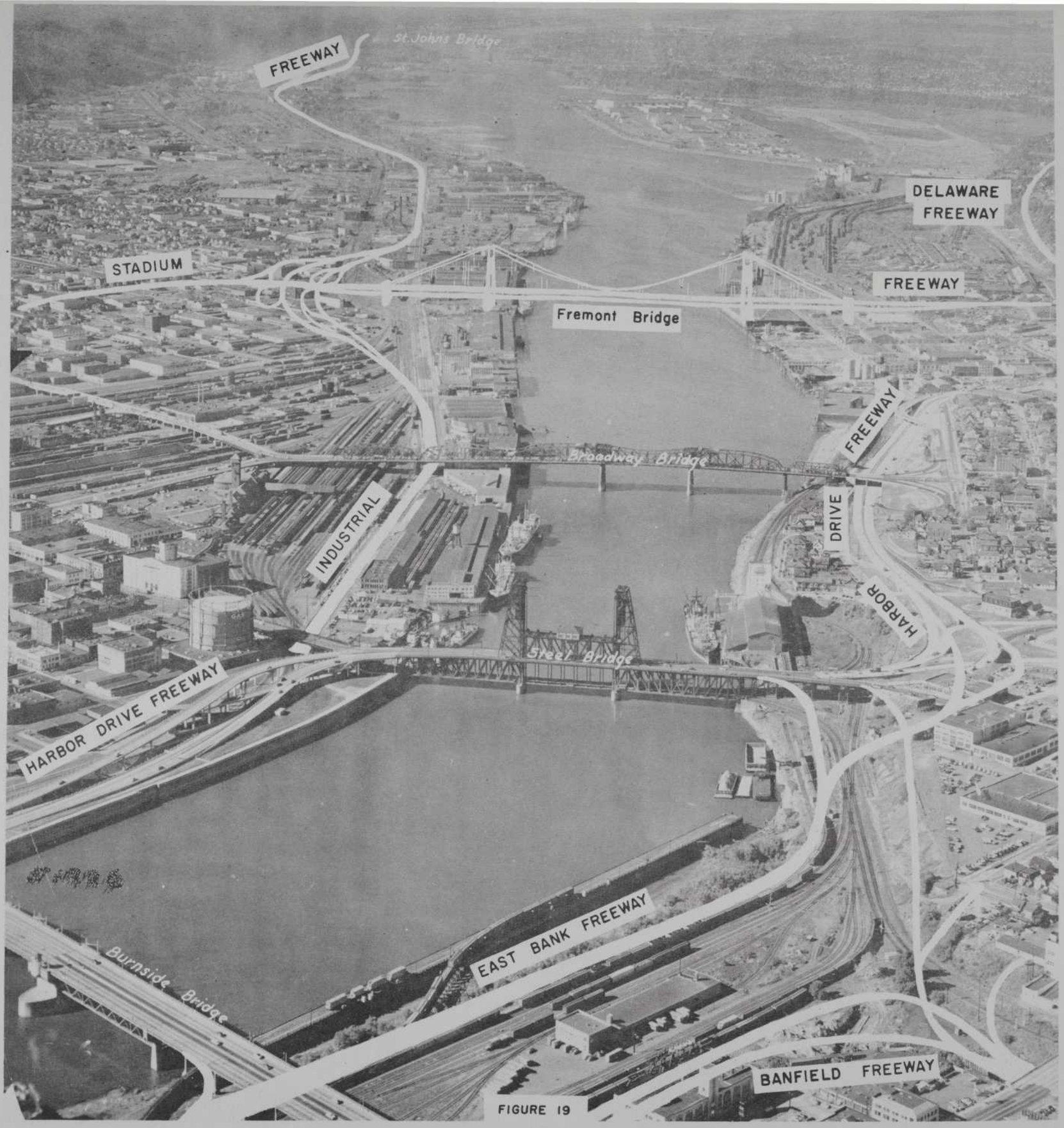
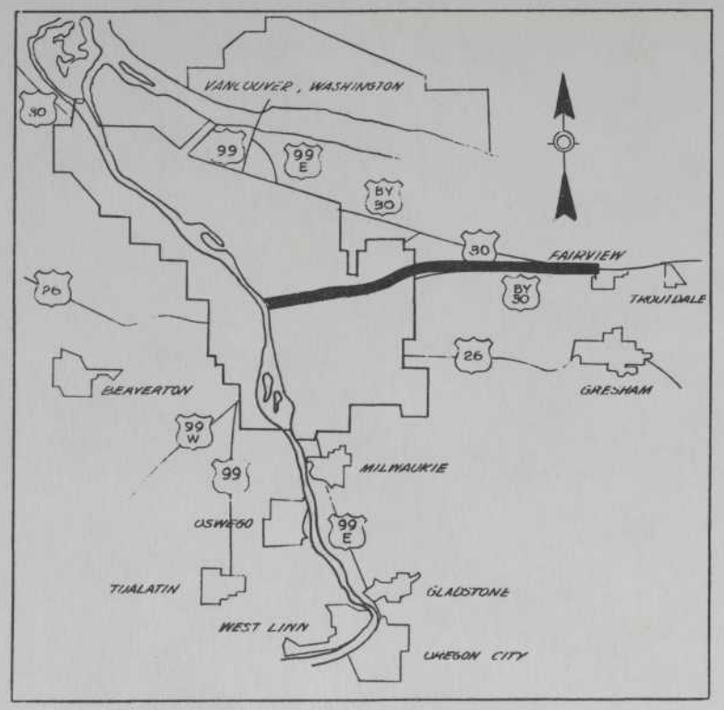


FIGURE 19

LOOKING NORTHWEST ALONG THE WILLAMETTE RIVER

FREEWAYS



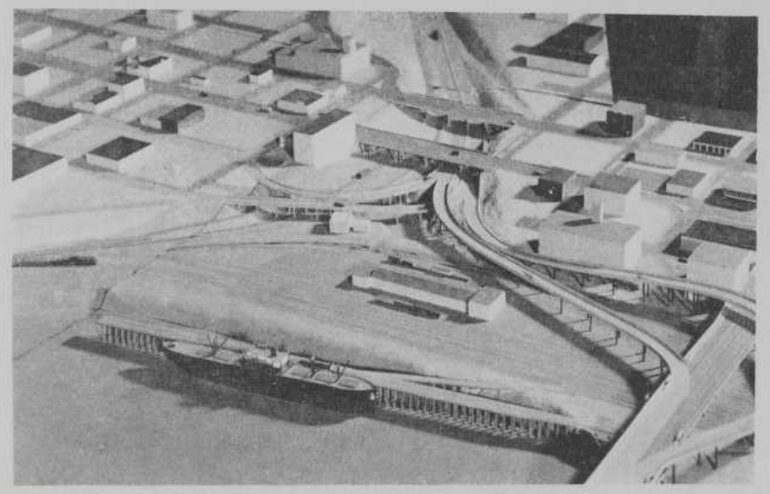
F1 - BANFIELD FREEWAY (US30)
WILLAMETTE RIVER - FAIRVIEW

THE STATE HIGHWAY DEPARTMENT HAS FOR SEVERAL YEARS BEEN PROGRAMING AND CONSTRUCTING PORTIONS OF THE BANFIELD FREEWAY (FORMERLY CALLED BANFIELD EXPRESSWAY) BETWEEN TROUTDALE AND THE WILLAMETTE RIVER. THE LOCATION OF THIS FREEWAY PARALLELS THE UNION PACIFIC RAILROAD PASSENGER LINE THROUGHOUT ITS ENTIRE LENGTH AND AS IT ENTERS THE CITY OF PORTLAND PROPER THE LOCATION IS IN SULLIVAN GULCH.

RIGHTS OF WAY HAVE BEEN ACQUIRED THROUGHOUT THE ENTIRE SECTION. CONTRACTS HAVE BEEN LET BETWEEN 42ND AVENUE AND FAIRVIEW. IT IS ANTICIPATED THAT THE SECTION FROM 42ND AVENUE EASTERLY WILL BE OPEN TO TRAFFIC IN THE FALL OF 1955. CONTRACTS ARE YET TO BE LET ON THE WILLAMETTE RIVER-42ND AVENUE SECTION BUT IT IS EXPECTED THAT SUCH WILL BE DONE IN THE NEAR FUTURE AND THIS SECTION WILL BE OPEN TO TRAFFIC BY 1958. THE LATTER SECTION IS TO BE CONSTRUCTED TO SIX LANES AND FROM 42ND AVENUE EASTERLY FOUR LANES WILL BE CONSTRUCTED.

BY 1975 TRAFFIC VOLUMES ARE EXPECTED TO RANGE FROM 65,000 VEHICLES PER DAY IN THE SECTION WEST OF 42ND AVENUE, DIMINISHING TO 30,000 VEHICLES PER DAY EAST OF THE CASCADE FREEWAY, AND TRAFFIC VOLUMES IN THE MORE EASTERLY PORTION IN THE VICINITY OF TROUTDALE AMOUNTING TO SOME 8,000 VEHICLES PER DAY. THE BANFIELD FREEWAY, BEING SCHEDULED FOR EARLY COMPLETION, WILL HAVE TRAFFIC DESIRING TO USE IT WHICH WILL CREATE MAJOR VOLUMES SHORTLY AFTER IT IS OPENED. AS BROUGHT OUT ELSEWHERE IN THIS REPORT, IT WILL BE NECESSARY LATER FOR THE CONSTRUCTION OF THE FREMONT FREEWAY AND CERTAIN MAJOR STREET IMPROVEMENTS FLANKING THE BANFIELD FREEWAY SO AS TO RELIEVE IT OF AN ALMOST CERTAIN OVERLOAD.

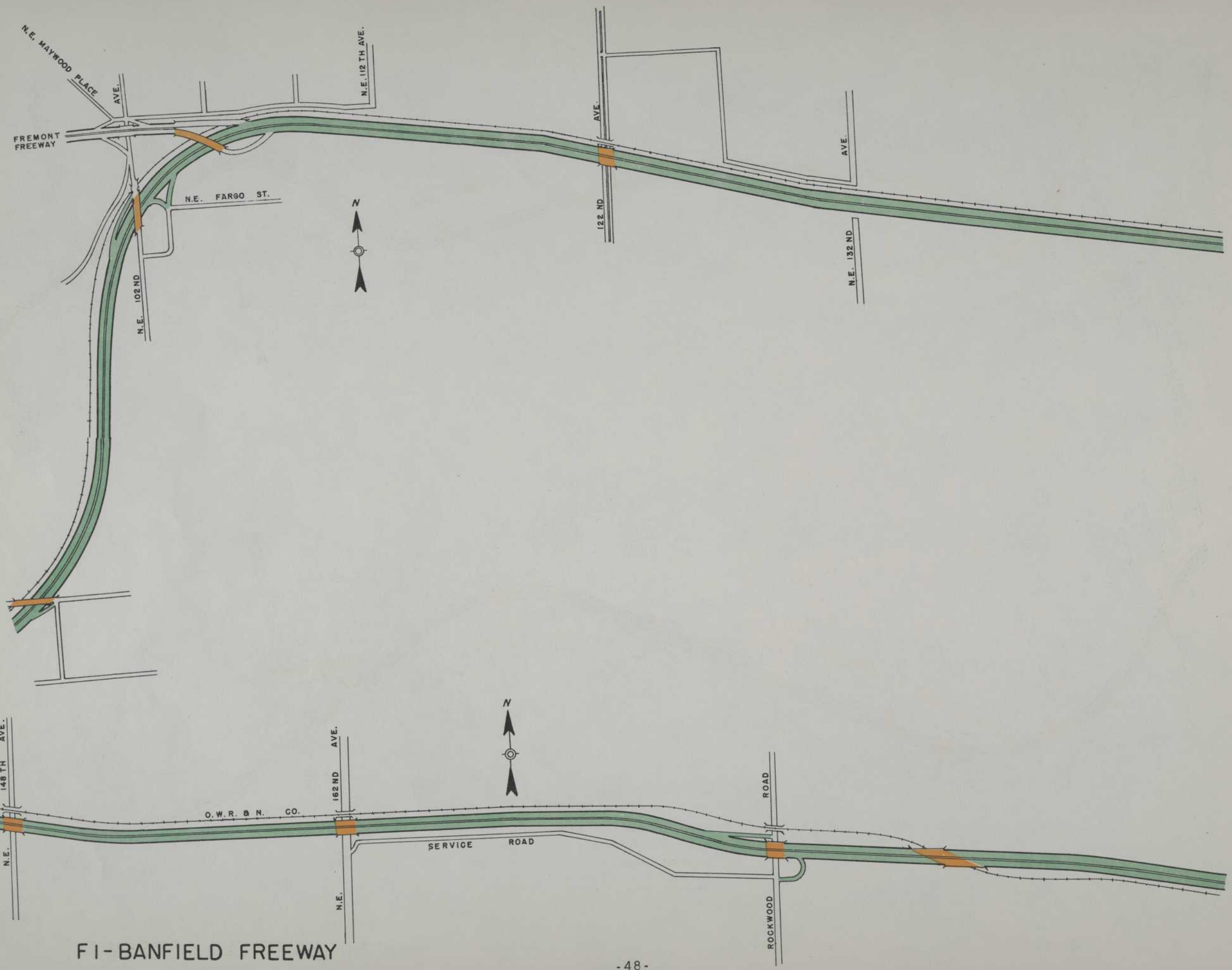
TRAFFIC INTERCHANGE WILL BE AS SHOWN ON THE OPPOSITE PAGE.



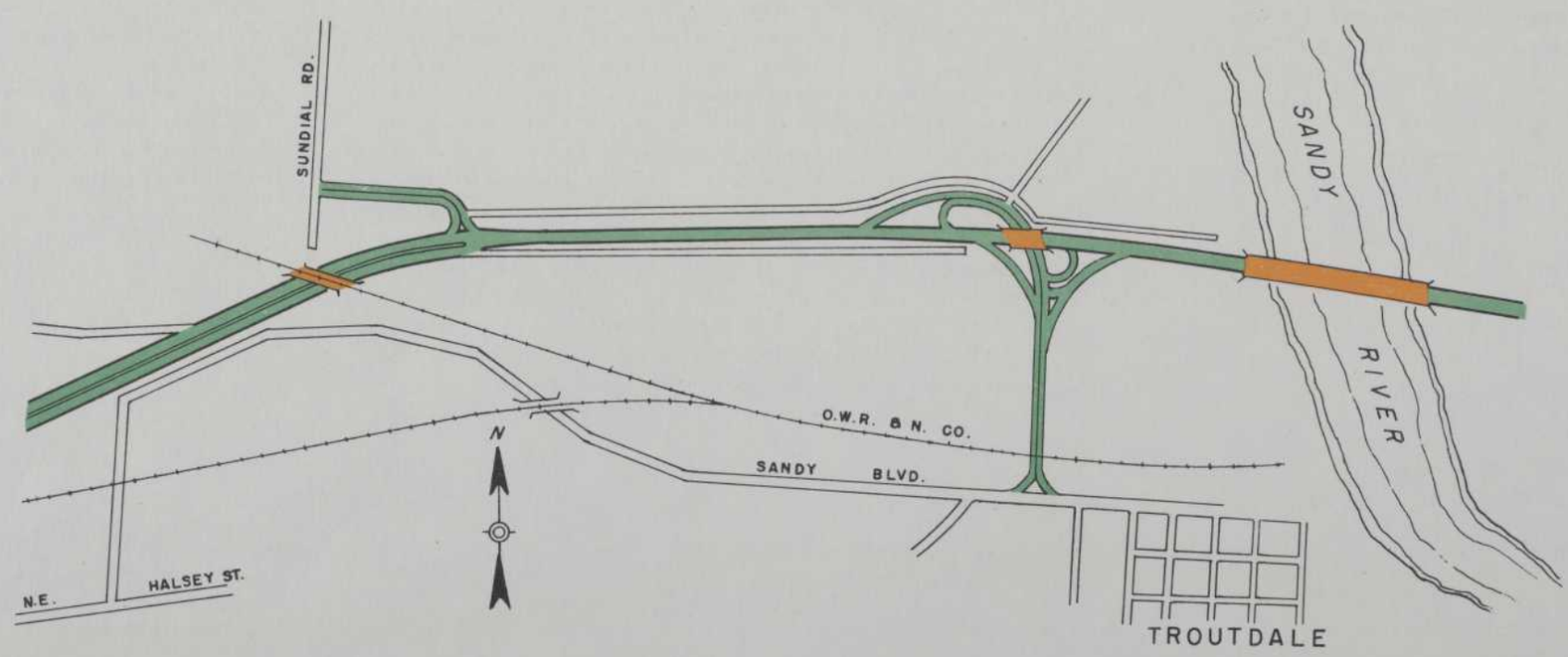
MODEL OF BANFIELD FREEWAY LOOKING EAST FROM BURNSIDE BRIDGE.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
WILLAMETTE RIVER	N.E. 42ND AVENUE	2.54	65.000	6	1,710 000	2,500,000	4,200,000	2,975,000	7,175,000
N.E. 42ND AVENUE	FAIRVIEW	11.38	20,000	4		WORK UNDER CONTRACT			
TOTAL		13.92			1,710,000	2,500,000	4,200 000	2,975,000	7,175,000

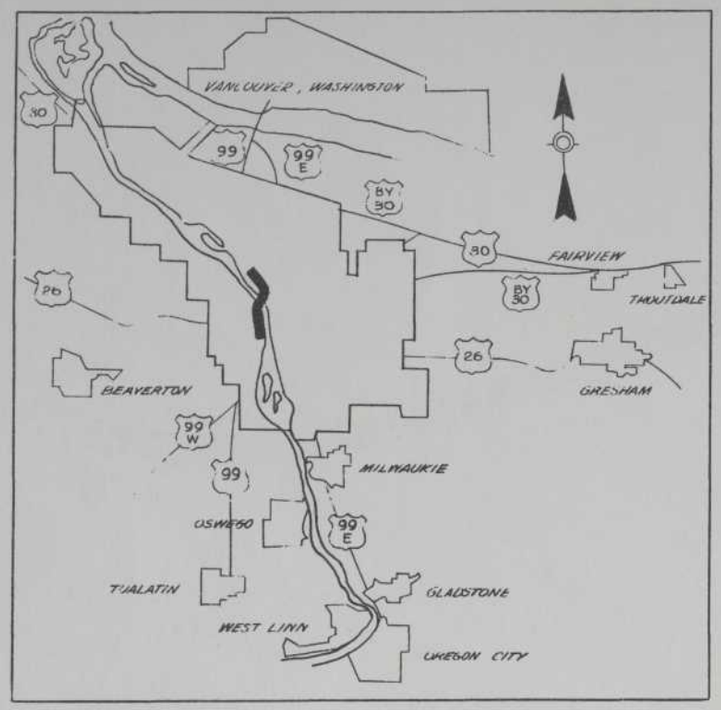
F1 - BANFIELD FREEWAY



F1-BANFIELD FREEWAY



FI- BANFIELD FREEWAY



F2 - HARBOR DRIVE FREEWAY (US99)
STEEL BRIDGE - PORTLAND-SALEM FREEWAY

In 1941 the State Highway Department completed the Harbor Drive Expressway south of the Steel Bridge and in 1951 reconstructed the Steel Bridge approaches and a northerly extension of Harbor Drive to standards as would permit free flow of traffic. At the outset the design was so conceived that at some future date the Expressway could be converted to a Freeway. It now appears desirable to complete this conversion in that it is anticipated that present-day volumes will have increased to some 60,000 vehicles per day on the Steel Bridge and throughout the majority of the section by 1975. In that portion of Harbor Drive between the proposed Sunset Freeway and the Portland-Salem Freeway it is anticipated that a total of 100,000 vehicles per day will use this Freeway by 1975.

The type of work to be accomplished calls for the "widening" of the Steel Bridge so as to care for six moving lanes of traffic on the bridge proper, direct connecting ramps between Harbor Drive northbound and the Burnside Bridge eastbound, and from east to south off the Burnside Bridge on to Harbor Drive. It also considers a two-level viaduct section between the Morrison and Hawthorne Bridges adjacent to the Oregon Journal Building. The present four-lane section will become deficient in capacity and must be reconstructed so that sufficient potential capacity is available to handle the anticipated load.

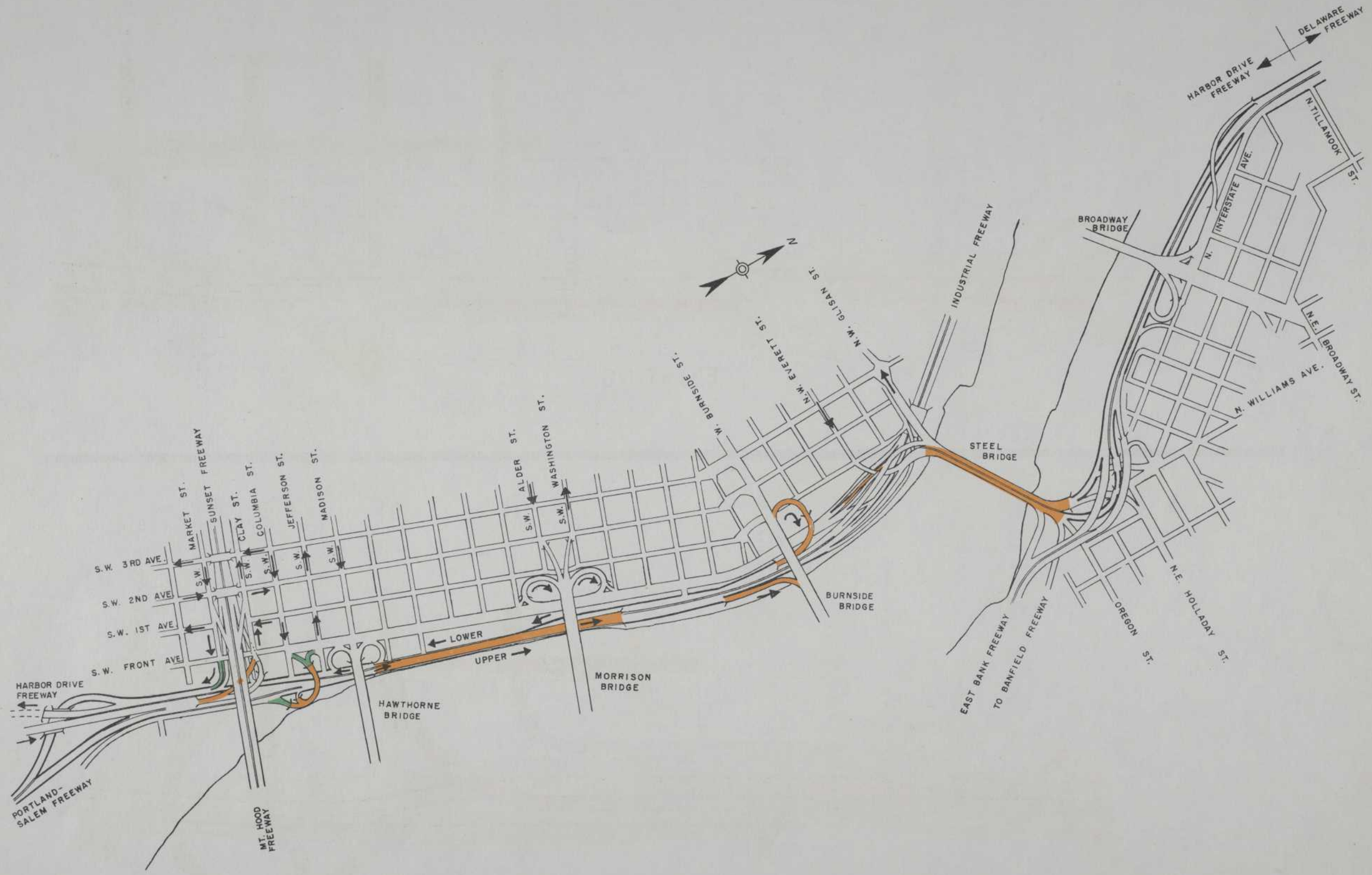
The first work that should be done, and by far the most important in the conversion of this Expressway to a Freeway, is the simultaneous construction of the Clay-Market and Columbia-Jefferson Street Connections. Such plan will allow for a closure of the openings in the medians as presently exists throughout the length of Harbor Drive and thereby eliminate cross-traffic at grade. Other work as mentioned hereinbefore would come at a later date in the development of the over-all program and is not essential for the conversion of the Expressway to a Freeway. $960,000 would be spent immediately for the construction of the Clay-Market and Columbia-Jefferson Street Connections. The summary below outlines in considerable detail the construction costs for the several phases of work.

The illustrations shown on pages 52 and 53 set forth respectively: (1) the stage construction that would take place on the Harbor Drive Freeway between the Hawthorne Bridge and the Portland-Salem Freeway during the next several years, and (2) a presentation of the over-all program as it would be conceived in its final stage.

It will be noted that four stages of construction have been outlined. The first stage is the more urgent of the several and should be accomplished at an early date. It calls for constructing direct connections between Harbor Drive and Clay and Market Streets and a direct connection between the easterly frontage road and the Columbia-Jefferson One-way Couplet with connections between the latter and Harbor Drive to the north. Thus, an over-all interchange between Clay-Market and Columbia-Jefferson One-way Couplets and Harbor Drive can be accomplished through this construction without conflicting cross-movements on Harbor Drive Freeway proper. Stage two calls for constructing the Portland-Salem Freeway connections to Harbor Drive while stages three and four call for construction of a new Willamette River Bridge and the Sunset Freeway, respectively.

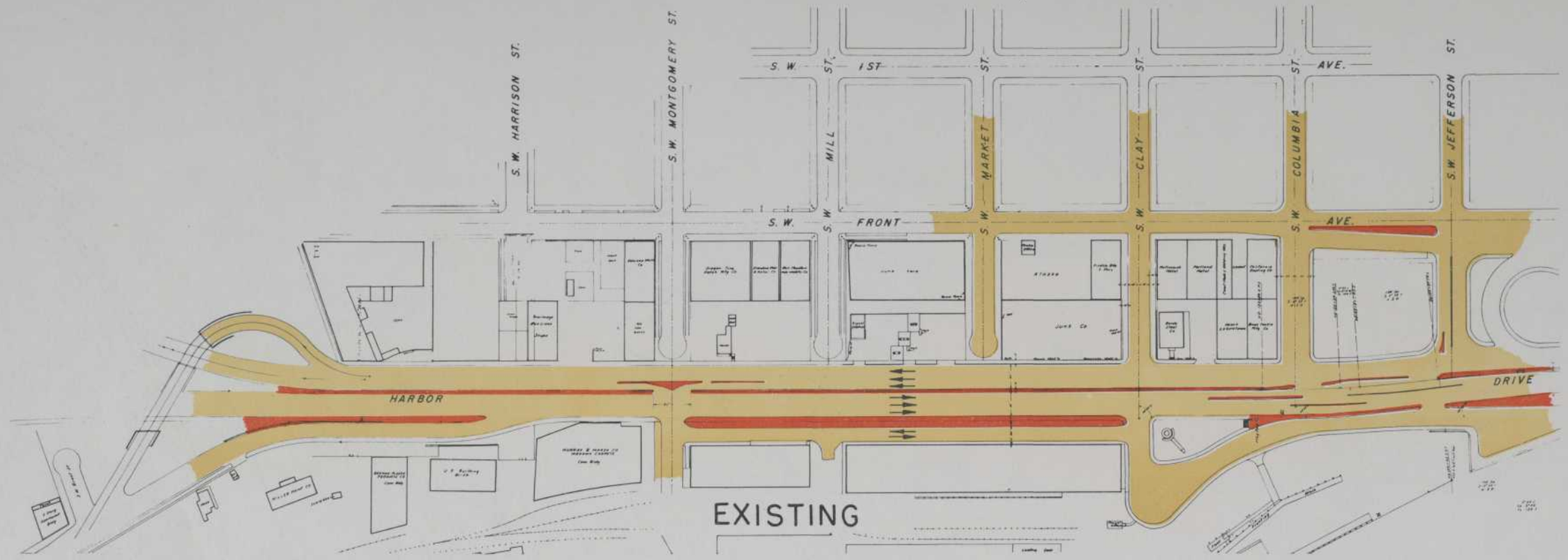
The final plan calls for the purchase of the right of way between Clay and Market Streets from Harbor Drive to 14th Avenue and the building of a depressedway. But should this right of way become prohibitive in cost, it is possible to build a cut and cover tunnel section within present street areas on Clay and Market Streets--the Clay Street tunnel for westbound traffic and the Market Street tunnel for eastbound traffic. An alternate sketch illustrating this plan and including the interchange at Harbor Drive is shown with the Sunset Freeway plan.

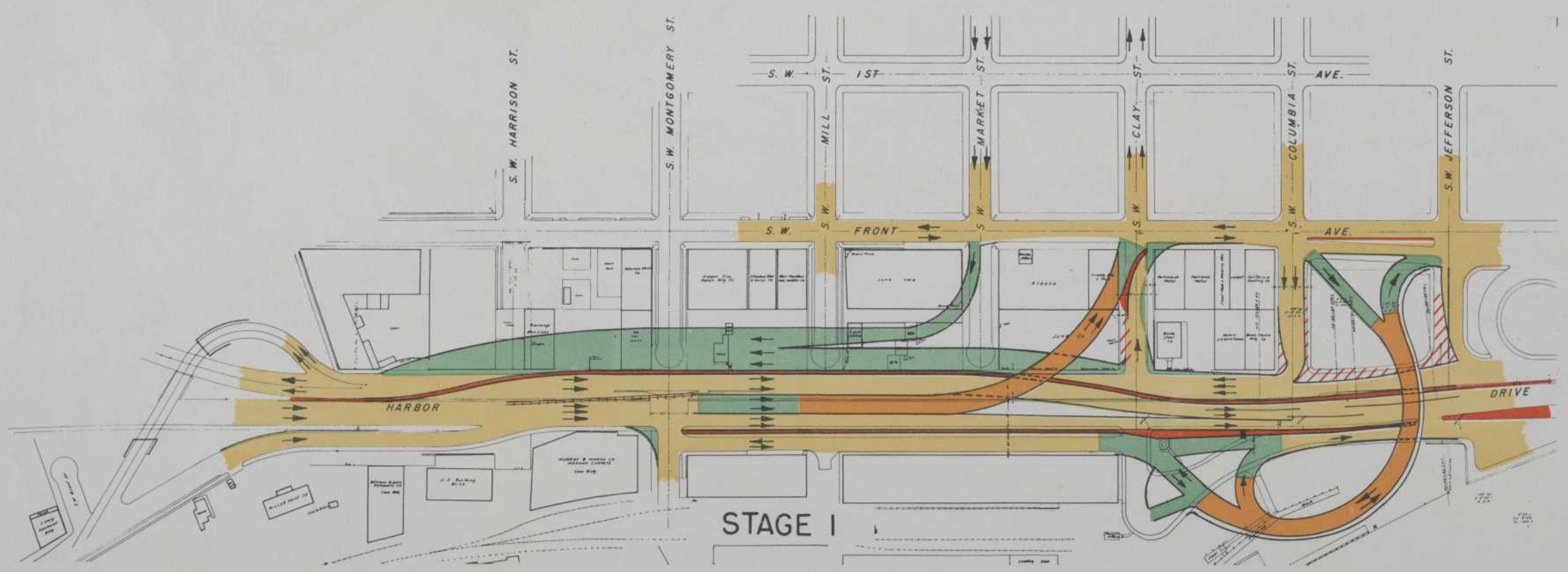
SECTION					COST				
FROM	TO	LENGTH (Miles)	TRAFFIC (1975) (ADT)	LANES No.	Grading & Paving ($)	Structures ($)	Constr. ($)	R/W ($)	Total ($)
East Approach Steel Bridge	West Approach Steel Bridge	0.44	60,000	6	- -	2,500,000	2,500,000	- -	2,500,000
Burnside Bridge Approaches				2	20,000	530,000	550,000	200,000	750,000
Morrison Bridge	Hawthorne Bridge	0.50	60,000	6	75,000	855,000	930,000	- -	930,000
Hawthorne Bridge	Portland-Salem Freeway	0.35	100,000	8	170,000	788,000	958,000	2,000	960,000
TOTAL		1.29			265,000	4,673,000	4,938,000	202,000	5,140,000



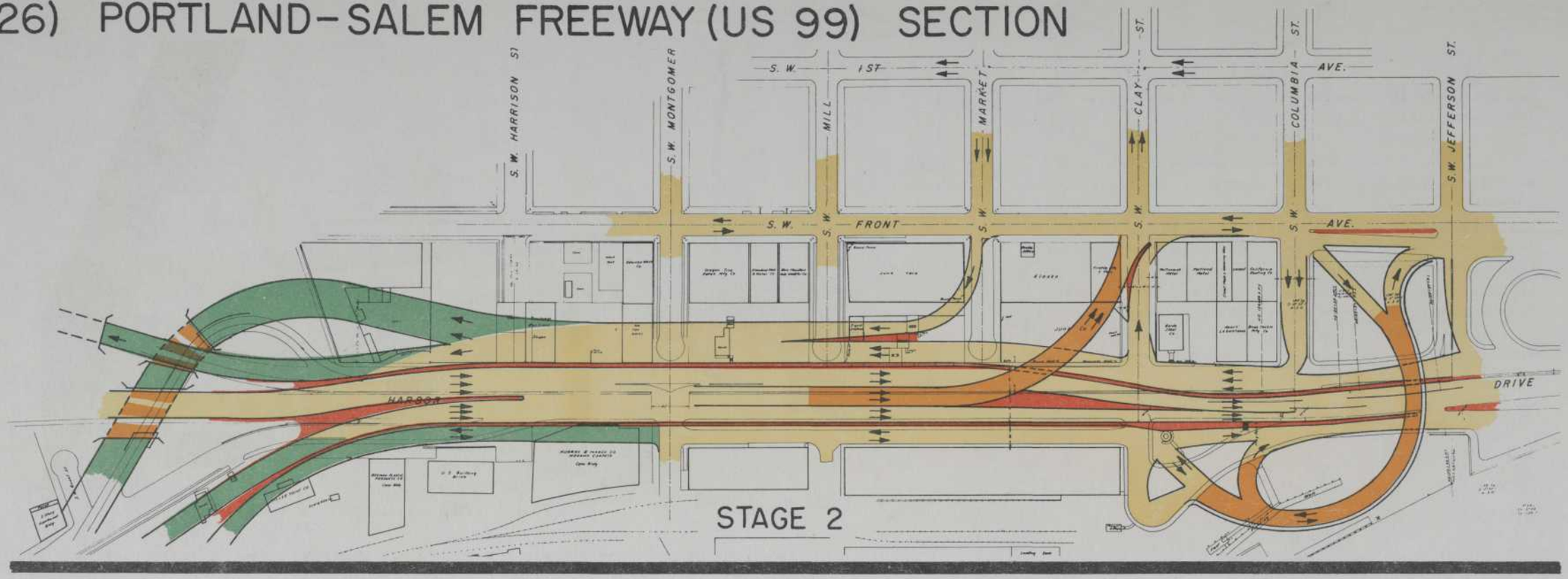
F2 - HARBOR DRIVE FREEWAY

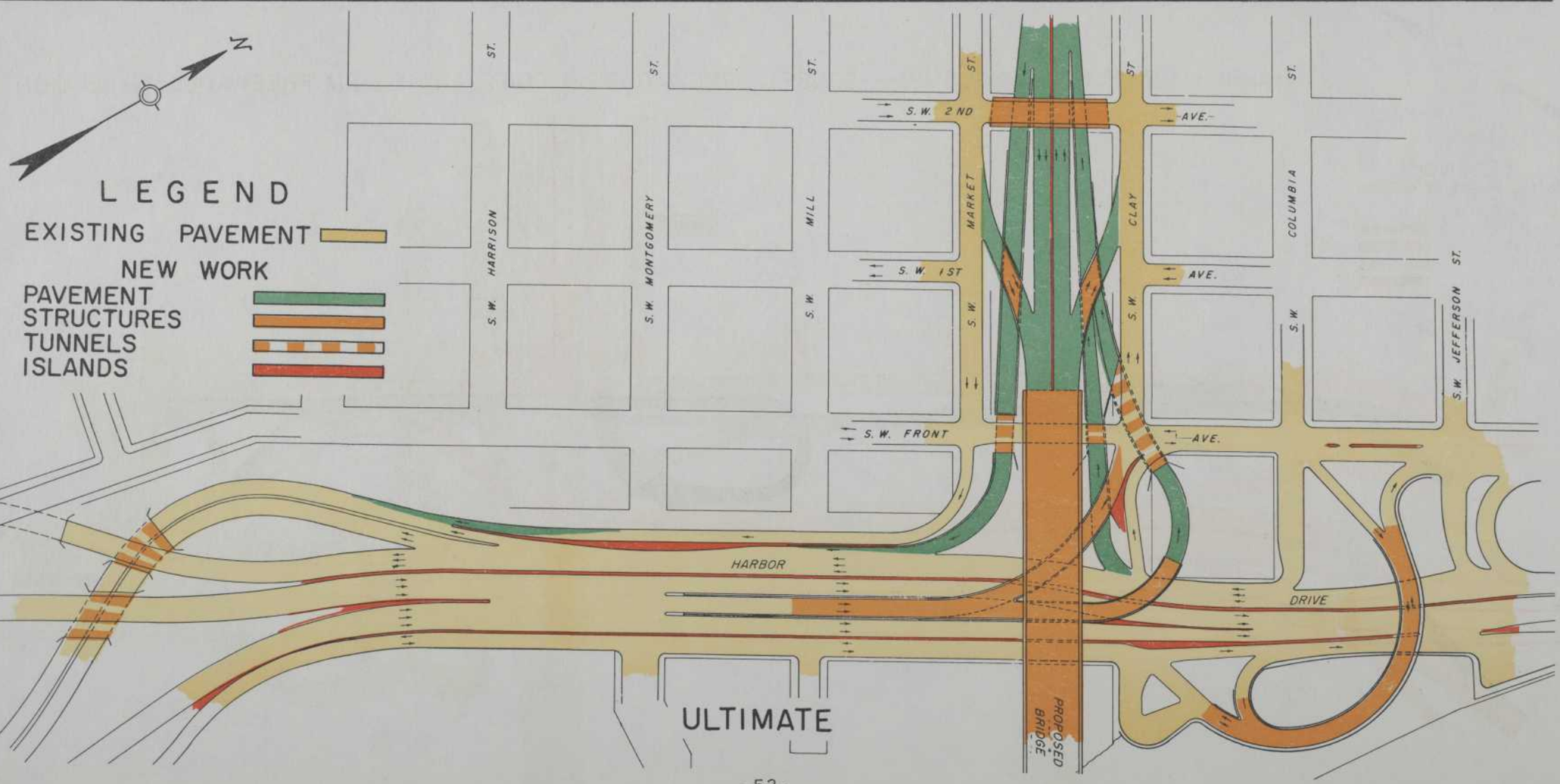
HARBOR DRIVE FREEWAY (US 99)——SUNSET FREEWAY





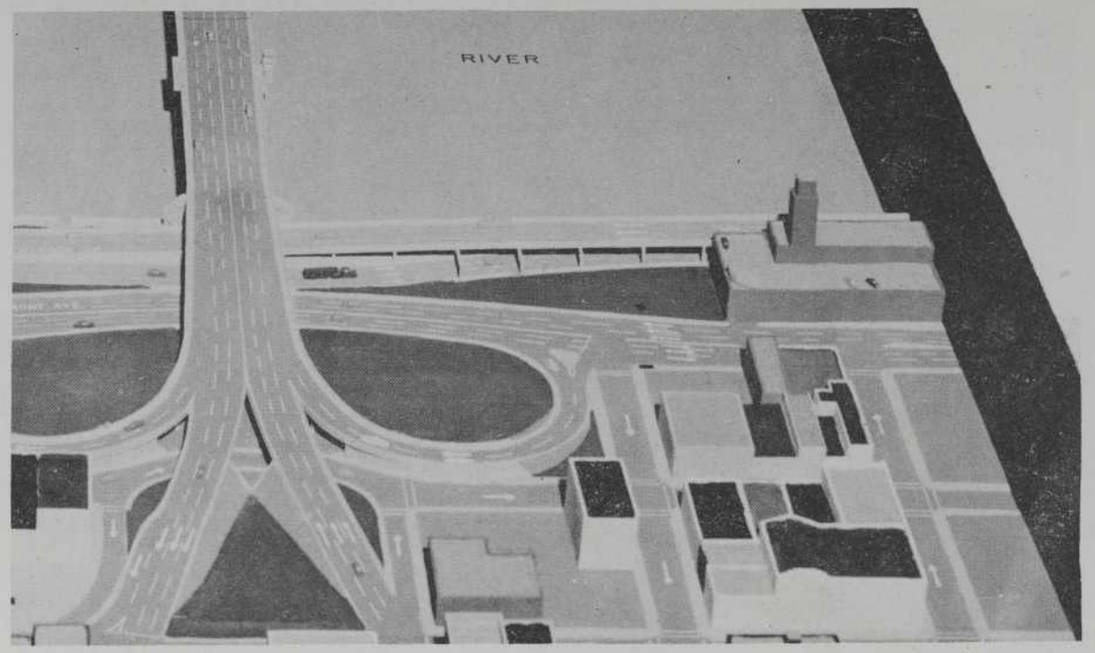
(US 26) PORTLAND-SALEM FREEWAY (US 99) SECTION





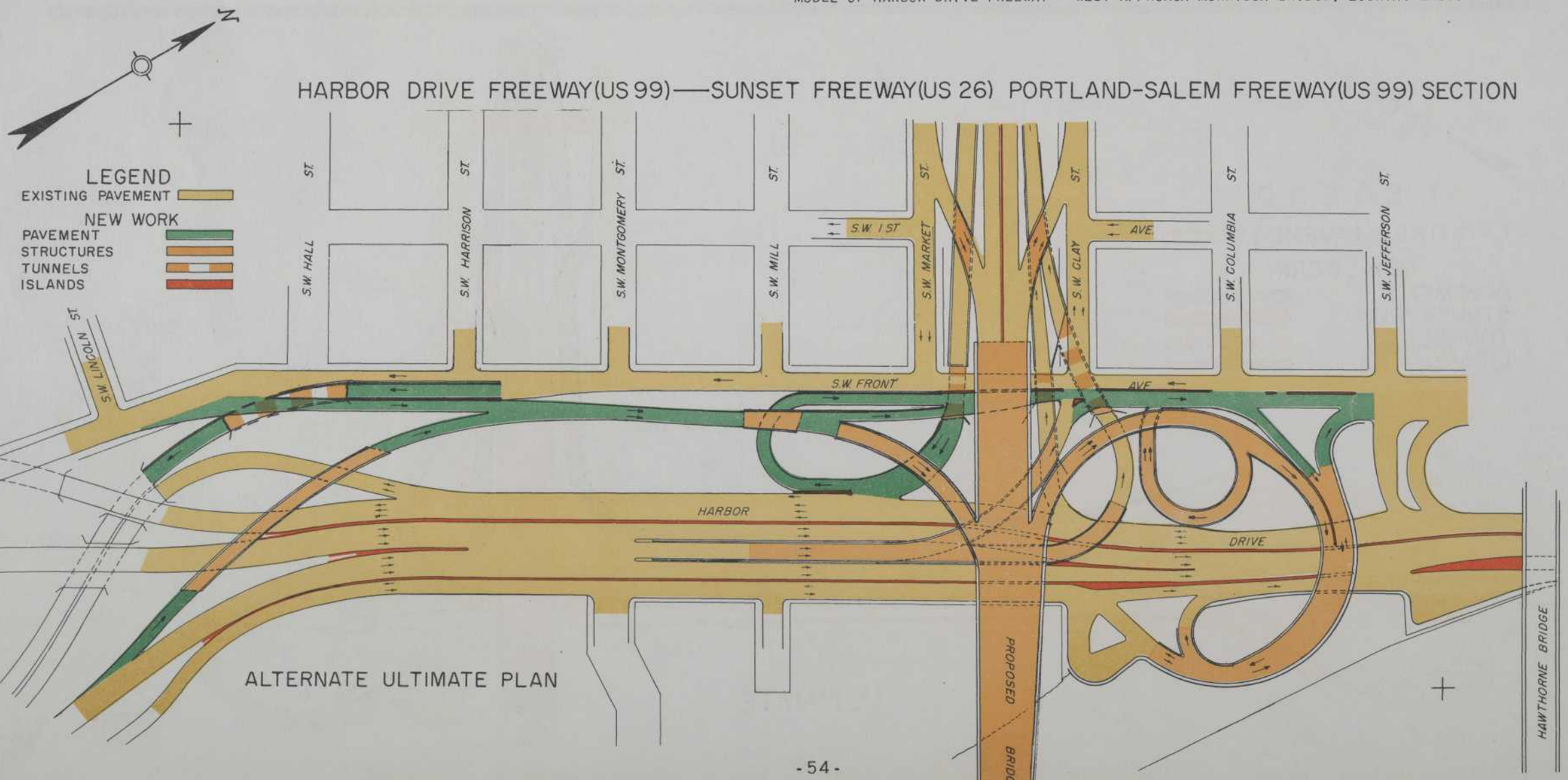
INCLUDING THE INTERCHANGE AT HARBOR DRIVE IS SHOWN WITH THE SUNSET FREEWAY PLAN.

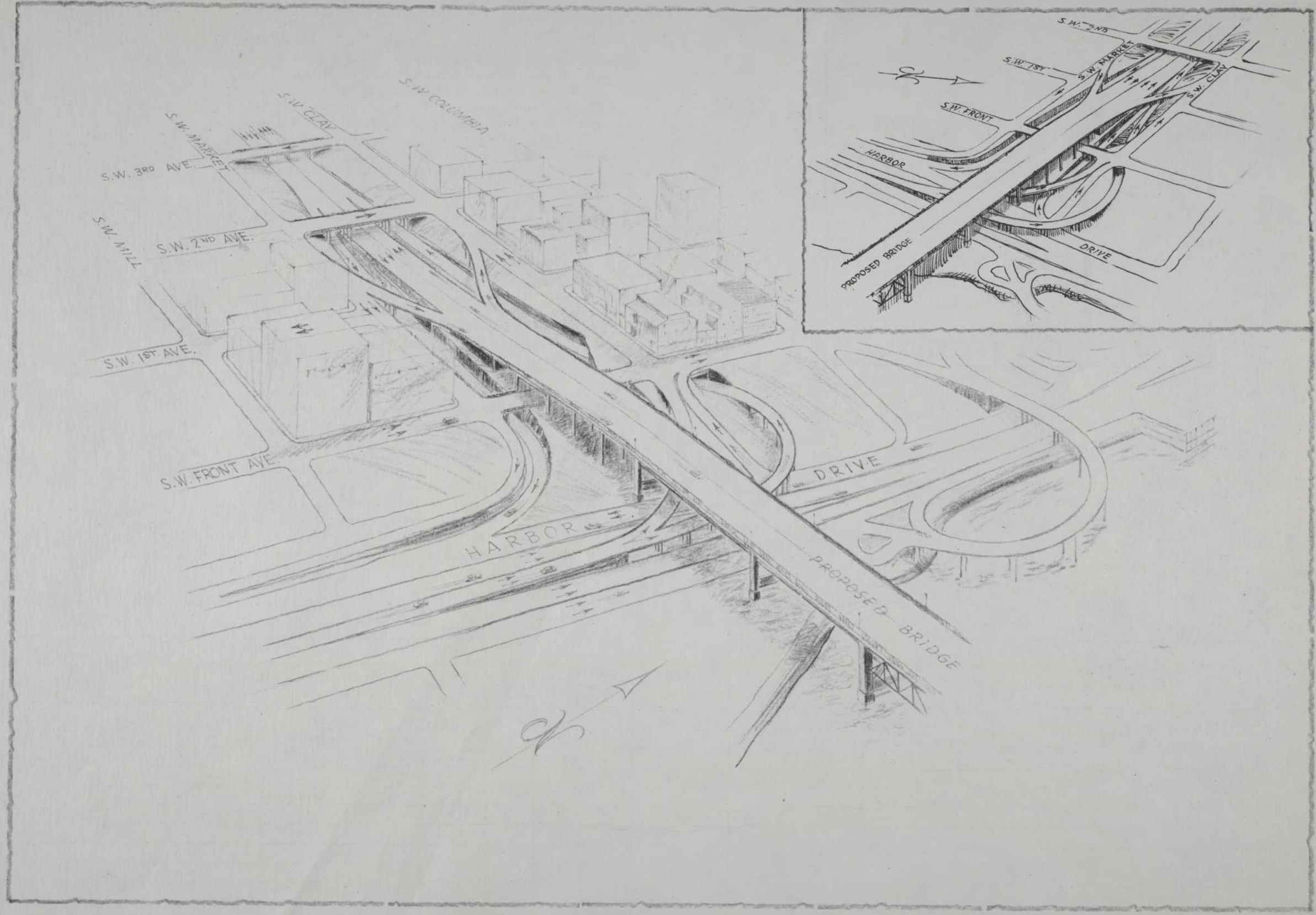
THE FINAL CONVERSION OF HARBOR DRIVE TO FREEWAY STATUS ALSO REQUIRES THE CONSTRUCTION OF UNDER AND OVERPASSES FOR PEDESTRIAN USE AND AN INSULATING HANDRAIL SECTION BETWEEN THE FREEWAY AND THE SIDEWALK ON THE SEAWALL. IT WILL ALSO BE NECESSARY TO CONSTRUCT FENCE OR HANDRAIL FACILITIES ON THE FRONT AVENUE SIDE OF HARBOR DRIVE TO PRECLUDE PEDESTRIAN CROSSINGS OF THIS FREEWAY. SUCH WORK IS PLANNED FOR EXECUTION SO AS TO COORDINATE WITH COMPLETION OF THE CONSTRUCTION AS DISCUSSED IN STAGE ONE AND ILLUSTRATED ON PAGE 52.



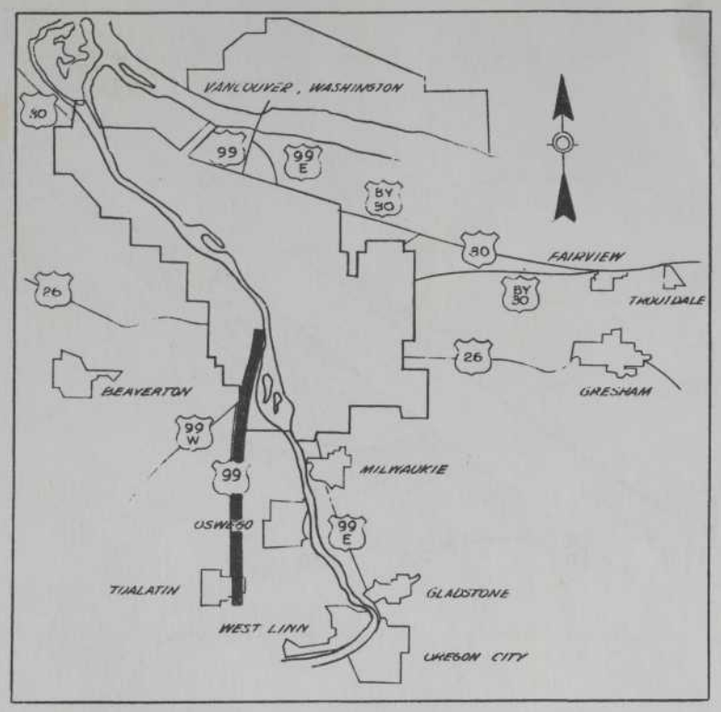
MODEL OF HARBOR DRIVE FREEWAY - WEST APPROACH MORRISON BRIDGE, LOOKING EAST.

HARBOR DRIVE FREEWAY(US 99)—SUNSET FREEWAY(US 26) PORTLAND-SALEM FREEWAY(US 99) SECTION





HARBOR DRIVE AND SUNSET FREEWAY CONNECTIONS



F3 - PORTLAND-SALEM FREEWAY (US99)
HARBOR DRIVE FREEWAY - TUALATIN RIVER

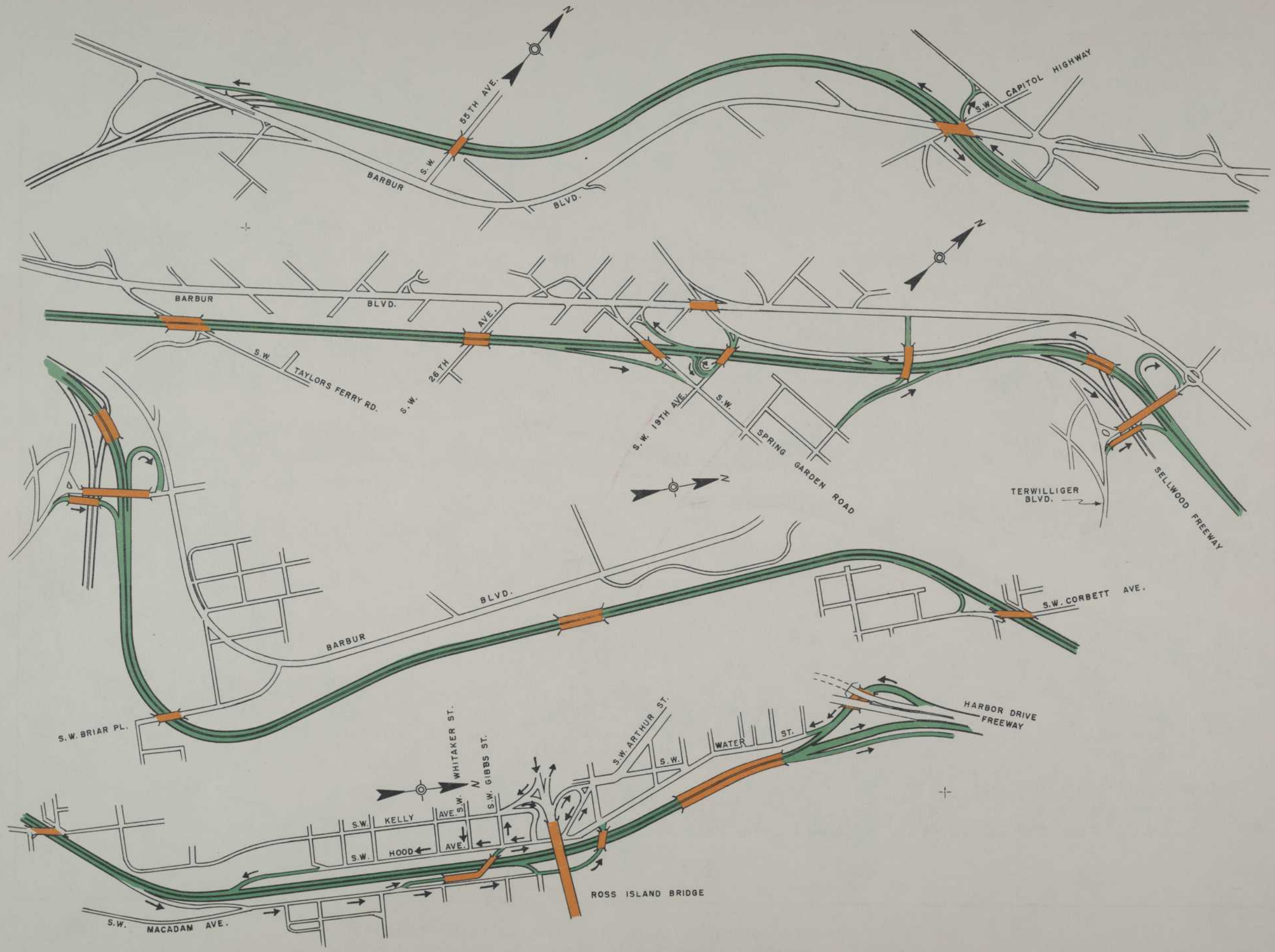
THIS FREEWAY COMPLETES A LINK IN THE INTERSTATE HIGHWAY SYSTEM FOR US99 AND CARES FOR ONE OF THE MAJOR DESIRE LINES AS ILLUSTRATED IN FIGURE 12. IT IS LOCATED IMMEDIATELY ADJACENT TO S.W. BARBUR BOULEVARD THROUGHOUT MOST OF ITS LENGTH. THE CONSTRUCTION PROPOSED HEREIN COMPLETES THE NORTHERLY LINK OF THE FREEWAY BETWEEN PORTLAND AND SALEM. THAT SECTION FROM MULTNOMAH COUNTY LINE TO SALEM IS NOW UNDER CONTRACT AND IS SCHEDULED FOR COMPLETION IN LATE 1955 OR MIDDLE 1956.

THIS FREEWAY NOT ONLY CARRIES CONSIDERABLE INTER- AND INTRA-STATE TRAFFIC BUT ALSO SERVES MUCH OF THE SOUTHWEST URBAN AND SUBURBAN RESIDENTIAL AREAS. IT IS TO BE CONSTRUCTED TO SIX LANES BETWEEN THE MULTNOMAH EXPRESSWAY AND HARBOR DRIVE FREEWAY, AND FOUR LANES FROM THE MULTNOMAH EXPRESSWAY SOUTHWESTERLY. BY 1975 IT IS EXPECTED THAT THERE WILL BE SOME 65,000 VEHICLES PER DAY IN THE MOST NORTHERLY SECTION AND THAT THE SOUTHERLY SECTION WILL CARE FOR SOME 15,000 VEHICLES PER DAY.

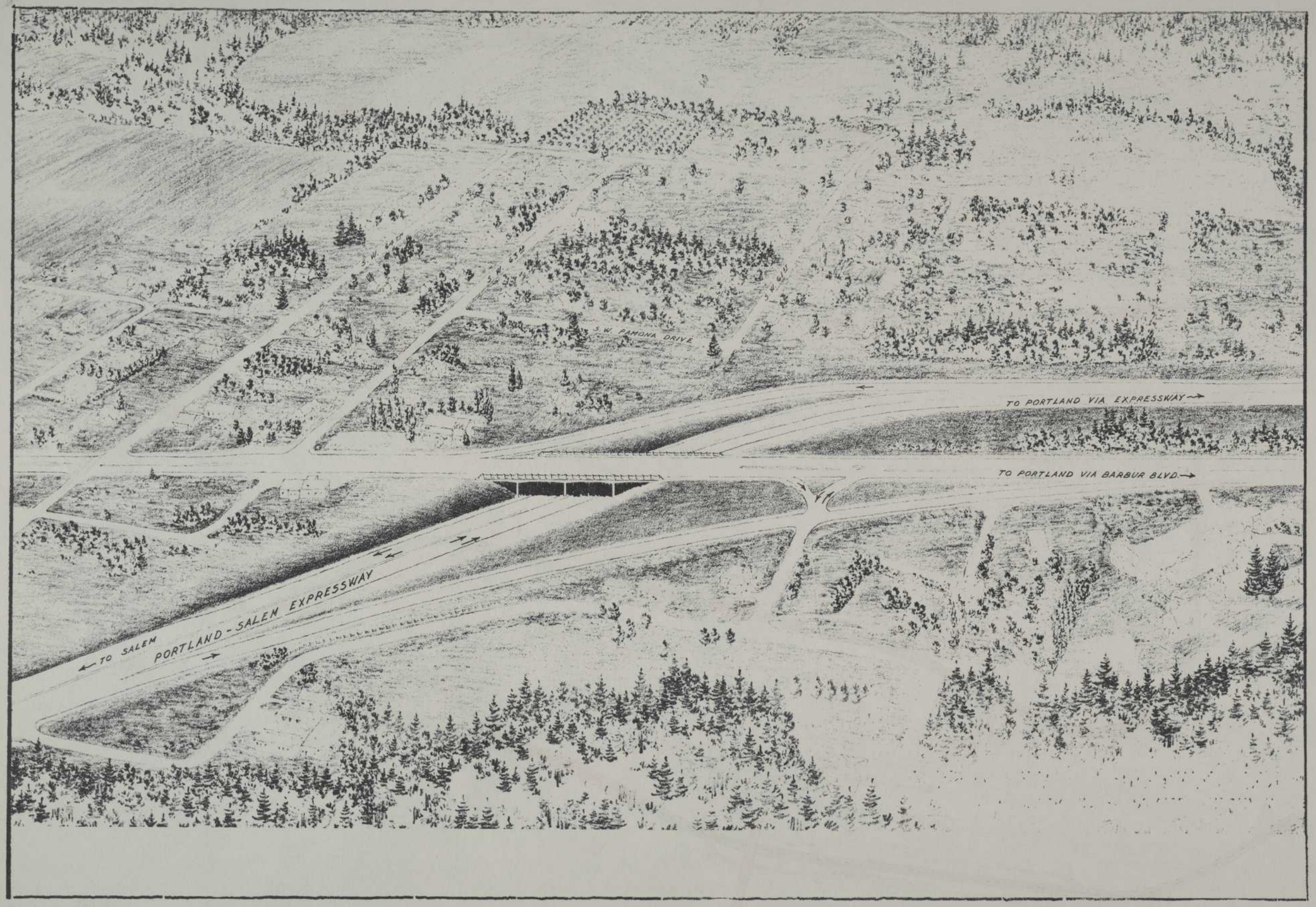
ACCESS IS DEVELOPED BETWEEN THE PORTLAND-SALEM FREEWAY AND OTHER FREEWAYS, EXPRESSWAYS AND MAJOR STREETS AS SHOWN ON THE OPPOSITE PAGE.

THIS HIGHWAY IS DEPRESSED OR AT GRADE THROUGHOUT. AT THE OUTSET THIS HIGHWAY IS CONSTRUCTED SO THAT FUTURE PROGRAMING OF OTHER FACILITIES CAN BE INTEGRATED INTO IT, SUCH AS THE CONNECTION WITH THE SELLWOOD FREEWAY AND MULTNOMAH EXPRESSWAY. RIGHT OF WAY ACQUISITION IS TO BE MADE SO THAT SIX LANES OF MOVING TRAFFIC CAN BE EXTENDED TOWARD TIGARD AS THE DEMAND REQUIRES IT.

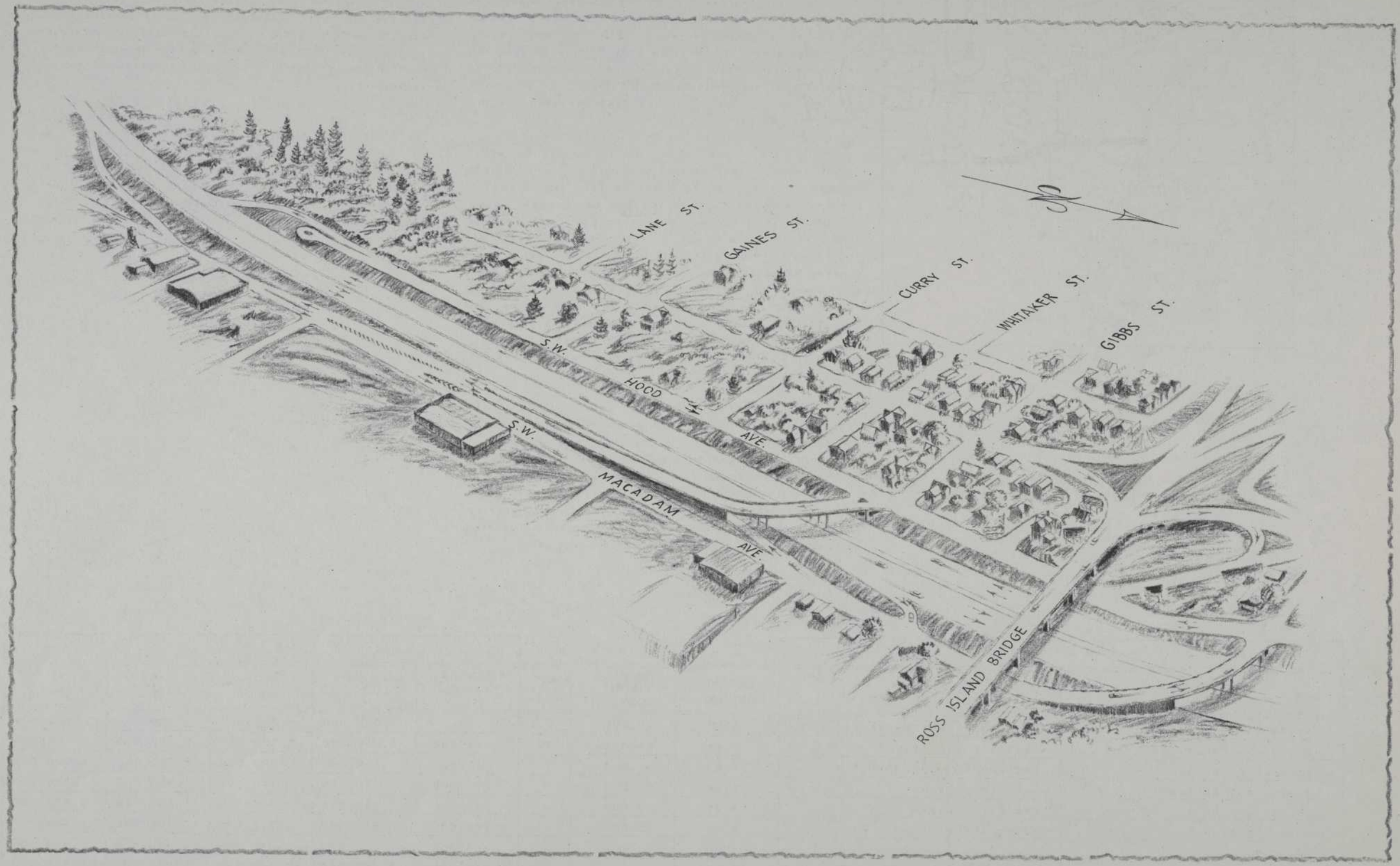
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
HARBOR DRIVE FREEWAY	ROSS ISLAND BRIDGE	0.55	65,000	6	180,000	780,000	960,000	1,140,000	2,100,000
ROSS ISLAND BRIDGE	MULTNOMAH EXPRESSWAY	3.18	55,000	6	1,960,000	990,000	2,950,000	2,090,000	5,040,000
MULTNOMAH EXPRESSWAY	S.W. CAPITOL HIGHWAY	1.74	33,000	4	950,000	730,000	1,680,000	1,950,000	3,630,000
S.W. CAPITOL HIGHWAY	WASHINGTON COUNTY LINE	1.14	15,000	4	420,000	- -	420,000	320,000	740,000
WASHINGTON COUNTY LINE	TUALATIN RIVER					WORK COMPLETED			
TOTAL		6.61			3,510,000	2,680,000	6,010,000	5,500,000	11,510,000



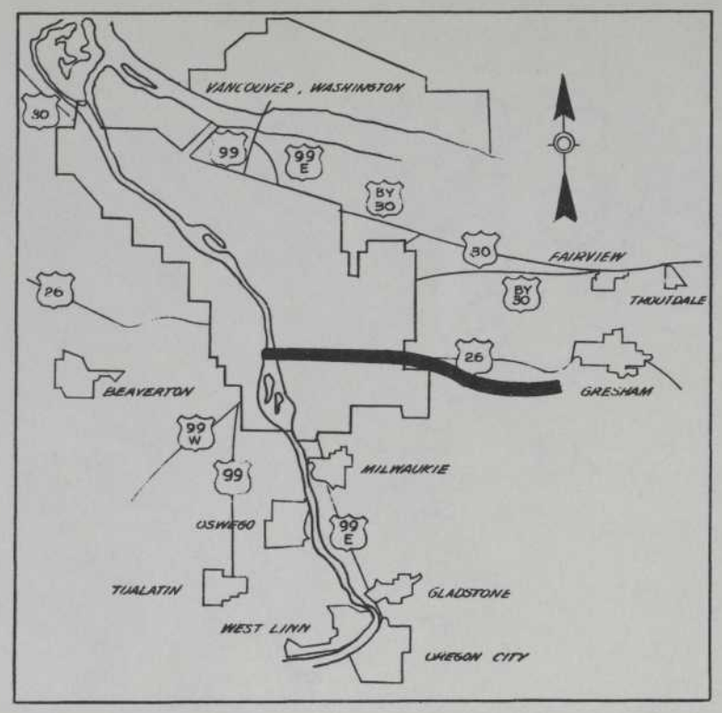
F3-PORTLAND-SALEM FREEWAY (US 99)



PROPOSED TRAFFIC INTERCHANGE PORTLAND SALEM-FREEWAY
BARBUR BOULEVARD NEAR TIGARD, LOOKING NORTH



PROPOSED CONNECTIONS PORTLAND-SALEM FREEWAY
AT S.W. MACADAM AND HOOD AVENUES



F4 - MT. HOOD FREEWAY (US26)
HARBOR DRIVE FREEWAY - LINNEMAN JUNCTION

THIS FREEWAY BISECTS THE SOUTHEAST PORTION OF THE CITY OF PORTLAND AND SERVES A VERY HEAVY LOAD OF TRAFFIC AS INDICATED IN FIGURE 12 AND AS SHOWN BY DESIRE LINES 2 AND 13. BETWEEN HARBOR DRIVE FREEWAY AND LAURELHURST FREEWAY, IT IS A CONNECTION BETWEEN US99 INTERSTATE HIGHWAY (HARBOR DRIVE FREEWAY) AND AN ALTERNATE ROUTING OF THE US99 INTERSTATE HIGHWAY VIA THE LAURELHURST FREEWAY.

THIS FREEWAY IS SO LOCATED THAT IN THE WESTERN PORTIONS THEREOF TRAFFIC VOLUMES AS HIGH AS 60,000 VEHICLES PER DAY ARE EXPECTED BY 1975, WHILE IN THE EASTERLY PORTION EAST OF THE CASCADE FREEWAY, SOME 15,000 VEHICLES PER DAY ARE EXPECTED. THIS FREEWAY ALSO SERVES NOT ONLY THE SOUTHEAST RESIDENTIAL AREA BUT THE PLANNED INDUSTRIAL DEVELOPMENT ALONG THE P.E.P. COMPANY RAILROAD RIGHT OF WAY IN THE SOUTHEAST AREA, AND IN ADDITION THE RECREATIONAL TRAFFIC DESTINED FOR THE MT. HOOD AREA. THE FREEWAY CHARACTERISTICS OF CONSTRUCTION ON THIS ROUTING ARE TERMINATED AT LINNEMAN JUNCTION BUT FROM LINNEMAN JUNCTION EASTERLY TO SANDY, THE ROUTING IS CONTINUOUS BUT IS DEVELOPED TO EXPRESSWAY STANDARDS.

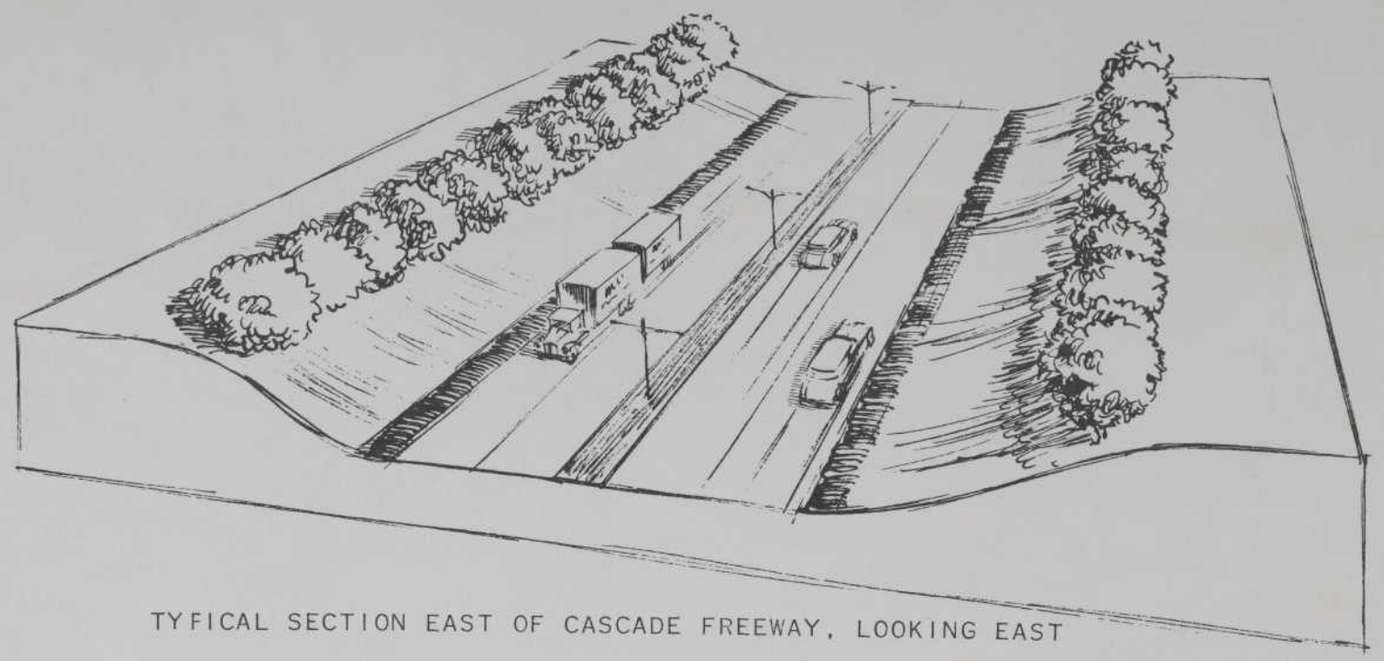
THE FREEWAY STARTS AS A CONTINUATION OF THE SUNSET FREEWAY (US26), WITH A NEW BRIDGE ACROSS THE WILLAMETTE RIVER. THIS STRUCTURE CROSSES THE RIVER AT A HIGH LEVEL SIMILAR TO THE ROSS ISLAND BRIDGE, OVERCROSSES THE PORTLAND TRACTION COMPANY'S OREGON CITY LINE, MAIN LINE OF THE SOUTHERN PACIFIC COMPANY, UNION AVENUE AND GRAND AVENUE. GENERALLY SPEAKING, WEST OF THE CASCADE FREEWAY THIS FREEWAY IS A DEPRESSED SECTION AND EAST THEREOF IS EITHER DEPRESSED OR AT GRADE.

THE MT. HOOD FREEWAY DEVELOPS ACCESS WITH ALL OTHER FREEWAYS AND EXPRESSWAYS THAT IT CROSSES AND IN ADDITION THERETO LOCAL NEIGHBORHOOD ACCESS IS DEVELOPED IN THE VICINITY OF S.E. 58TH AND 72ND AVENUES AND S.E. HOLGATE STREET. AT LINNEMAN JUNCTION ACCESS TO GRESHAM IS DEVELOPED.

SIX LANES ARE PROPOSED FOR CONSTRUCTION BETWEEN HARBOR DRIVE FREEWAY AND LAURELHURST FREEWAY, AND EAST THEREOF FOUR LANES WILL BE CONSTRUCTED. IT IS FELT THAT THIS, WITH THE PROVISION FOR ADDING OF TWO ADDITIONAL LANES BETWEEN THE LAURELHURST AND CASCADE FREEWAYS AT A LATER DATE, WILL ADEQUATELY SERVE TRAFFIC DEMANDS AS CAN BE EXPECTED TO UTILIZE THIS KEY FREEWAY.

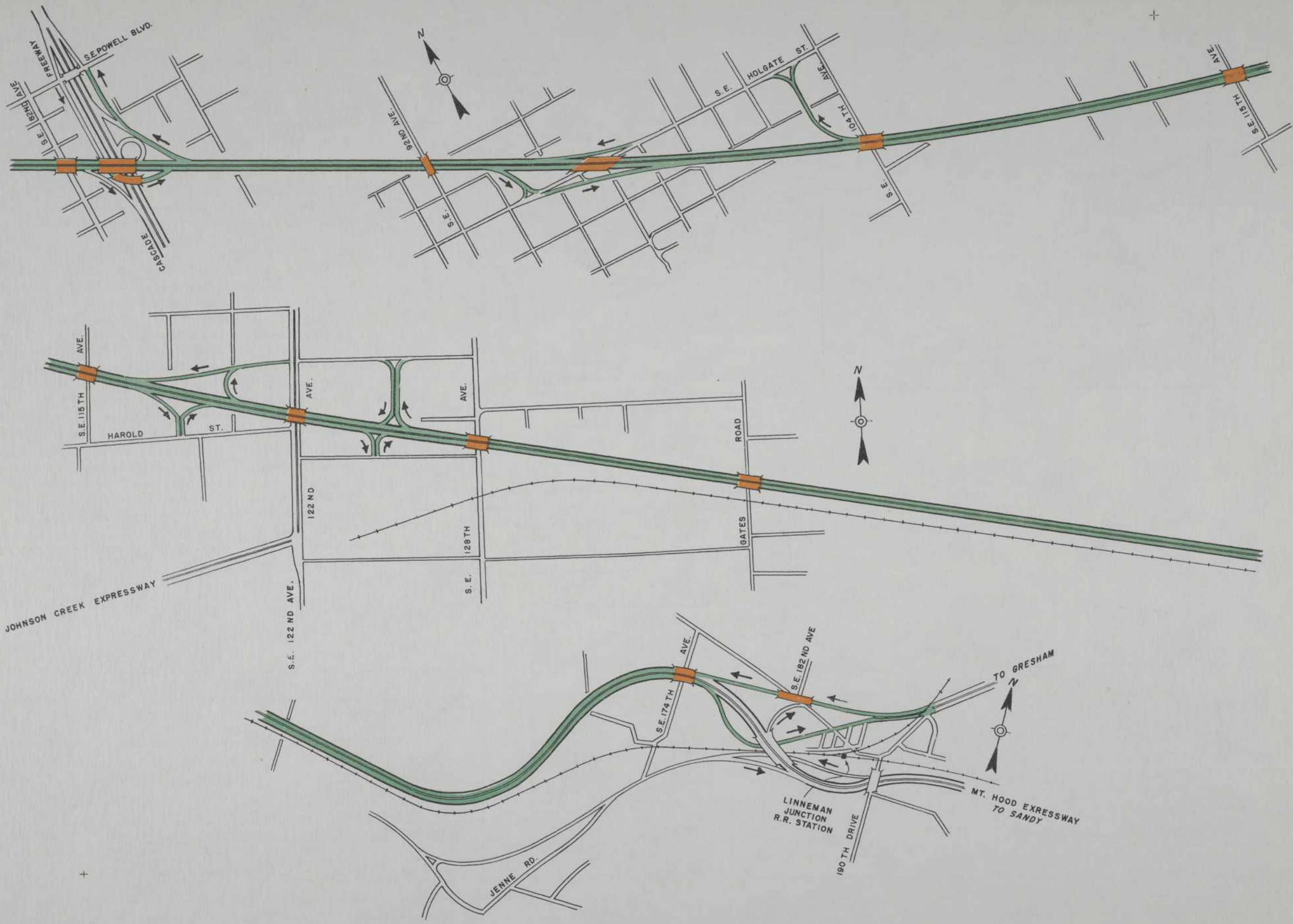
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
HARBOR DRIVE FREEWAY	MCLOUGHLIN EXPRESSWAY	0.68	65,000	6	- -	9,000,000	9,000,000	700,000	9,700,000
MCLOUGHLIN EXPRESSWAY	EASTSIDE EXPRESSWAY	0.98	50,000	6	320,000	2,450,000	2,770,000	2,300,000	5,070,000
EASTSIDE EXPRESSWAY	LAURELHURST FREEWAY	1.07	45,000	6	610,000	190,000	800,000	2,000,000	2,800,000
LAURELHURST FREEWAY	S.E. 58TH AVENUE	0.94	35,000	4	670,000	170,000	840,000	1,400,000	2,240,000
S.E. 58TH AVENUE	CASCADE FREEWAY	1.26	25,000	4	860,000	490,000	1,350,000	1,900,000	3,250,000
CASCADE FREEWAY	122ND AVENUE	2.18	15,000	4	780,000	610,000	1,390,000	300,000	1,690,000
122ND AVENUE	LINNEMAN JUNCTION	3.00	14,000	4	800,000	250,000	1,050,000	230,000	1,280,000
TOTAL		10.11			4,040,000	13,160,000	17,200,000	8,830,000	26,030,000

F4- MT. HOOD FREEWAY (US 26)

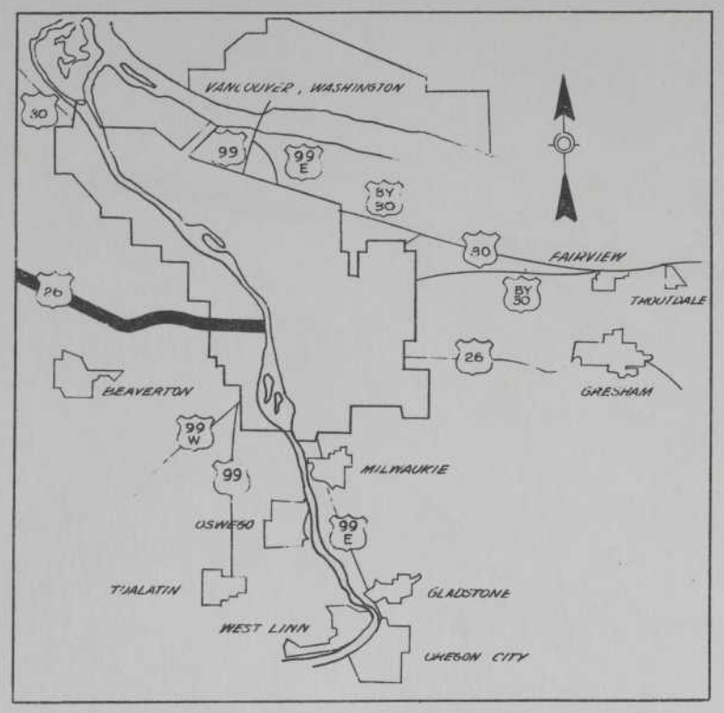


TYFICAL SECTION EAST OF CASCADE FREEWAY, LOOKING EAST

TYPICAL SECTION EAST OF 122ND AVENUE, LOOKING WEST.



F4 - MT. HOOD FREEWAY (US 26)



F5 - SUNSET FREEWAY (US26)
WHEELER AVENUE - HARBOR DRIVE FREEWAY

THE SUNSET FREEWAY IS, THROUGHOUT MOST OF ITS LENGTH, A BETTERMENT OF THE PRESENT SUNSET HIGHWAY FROM ARTERIAL HIGHWAY AND EXPRESSWAY STANDARDS TO FREEWAY STANDARDS. THE EASTERLY SECTION OF THIS FREEWAY IS THROUGH SOMEWHAT VIRGIN ALIGNMENT, SO TO SPEAK, IN THAT A TUNNEL UNDER VISTA AVENUE JUST SOUTH OF JEFFERSON STREET IS CONTEMPLATED AS IS A DEPRESSED FREEWAY BETWEEN THE CLAY-MARKET STREET ONE-WAY COUPLET TO THE HARBOR DRIVE FREEWAY AND CONNECTING TO A PROPOSED BRIDGE ACROSS THE WILLAMETTE RIVER (MT. HOOD FREEWAY).

TRAFFIC VOLUMES ON THIS PROJECT RANGE FROM A MINIMUM OF 10,000 VEHICLES PER DAY IN 1975 IN THE WESTERLY EXTREMITIES OF THE PORTLAND URBAN AREA TO SOME 50,000 VEHICLES PER DAY BETWEEN THE STADIUM AND HARBOR DRIVE FREEWAYS. THE FREEWAY WILL BE BUILT TO FOUR LANES FROM WHEELER AVENUE TO SYLVAN AND SIX LANES FROM SYLVAN TO HARBOR DRIVE FREEWAY.

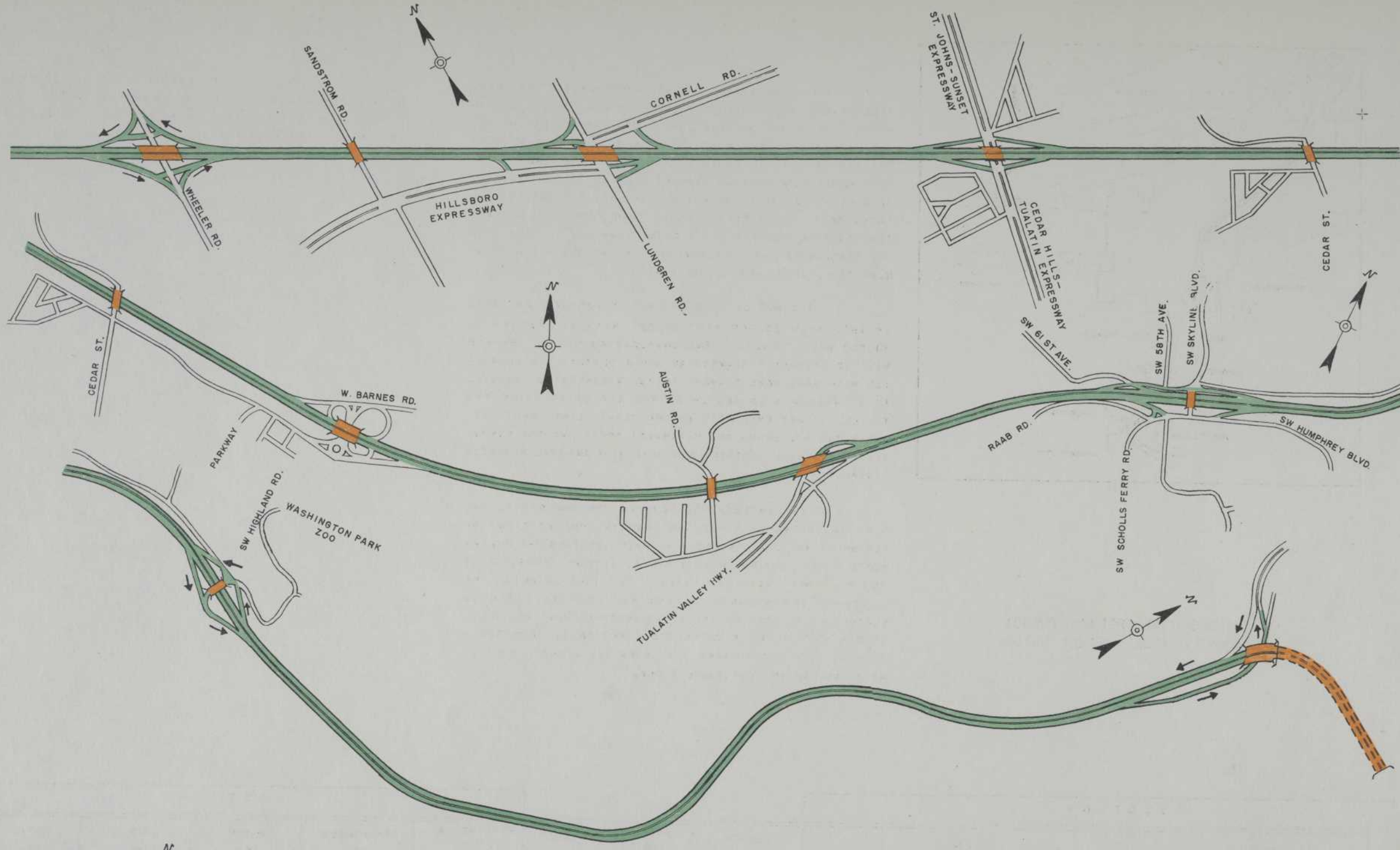
TRAFFIC INTERCHANGES AND ACCESSES ARE AS SHOWN ON THE OPPOSITE PAGE; GENERALLY SPEAKING, INTERCHANGES ARE PROVIDED AT THE INTERSECTION OF OTHER FREEWAYS, MAJOR STREETS AND EXPRESSWAYS WITH THIS ROUTE. IN ADDITION, ACCESS POINTS ARE PROVIDED DIRECTLY OPPOSITE THE CENTRAL BUSINESS DISTRICT.

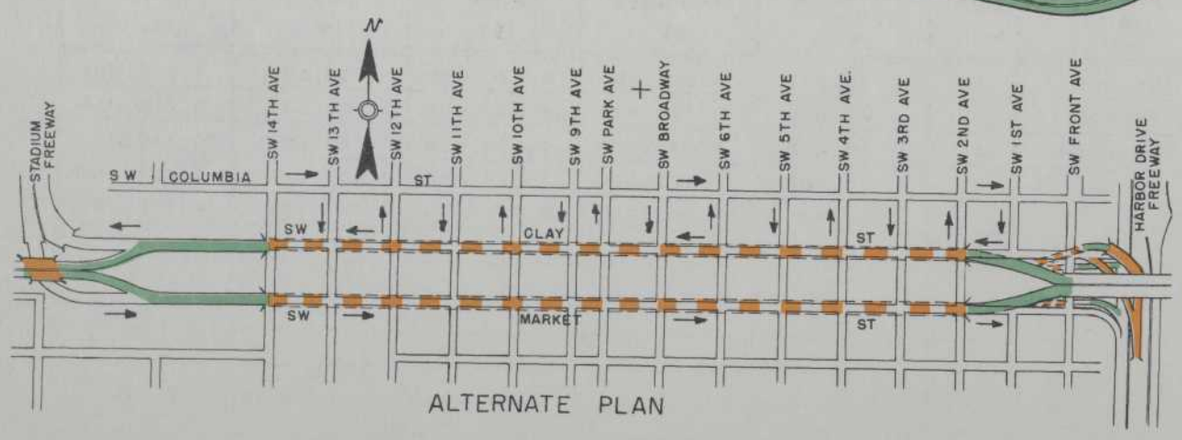
REFERENCE IS MADE TO DISCUSSION FOR THE HARBOR DRIVE FREEWAY WHEREIN THE CONSTRUCTION OF THE CONNECTIONS BETWEEN THE SUNSET AND HARBOR DRIVE FREEWAYS WAS DISCUSSED WITH REFERENCE TO THE PROGRAMMING OF CONSTRUCTION. THE PLAN AS PROPOSED CALLS FOR THE ACQUISITION OF THE PUBLIC AUDITORIUM. THE COST OF THE ACQUISITION AND RESULTING CONSTRUCTION COSTS IS ESTIMATED TO BE LESS THAN THE CONSTRUCTION COSTS FOR A "CUT AND FILL" TUNNEL SECTION ON CLAY AND MARKET STREETS. THE TAKING OF THE AUDITORIUM ALSO AFFORDS A MORE DESIRABLE ALIGNMENT.

AN ALTERNATE LOCATION FOR THE SUNSET FREEWAY ON THE SOUTH SIDE OF THE CENTRAL BUSINESS DISTRICT, SPECIFICALLY BETWEEN S.W. 14TH AVENUE AND HARBOR DRIVE FREEWAY WAS STUDIED. SUCH ALTERNATE LOCATION UTILIZED A DEPRESSED SECTION. BETWEEN S.W. 14TH AND 11TH AVENUES IT WAS BETWEEN THE CLAY-MARKET STREET ONE-WAY COUPLET. IN THE AREA BETWEEN S.W. 11TH AVENUE AND S.W. BROADWAY, A TRANSITION TO THE MILL-MONTGOMERY STREET ONE-WAY COUPLET WAS ACCOMPLISHED AND FROM S.W. BROADWAY TO HARBOR DRIVE FREEWAY A DEPRESSED SECTION BETWEEN A PROPOSED MILL-MONTGOMERY STREET ONE-WAY COUPLET WAS EFFECTED.

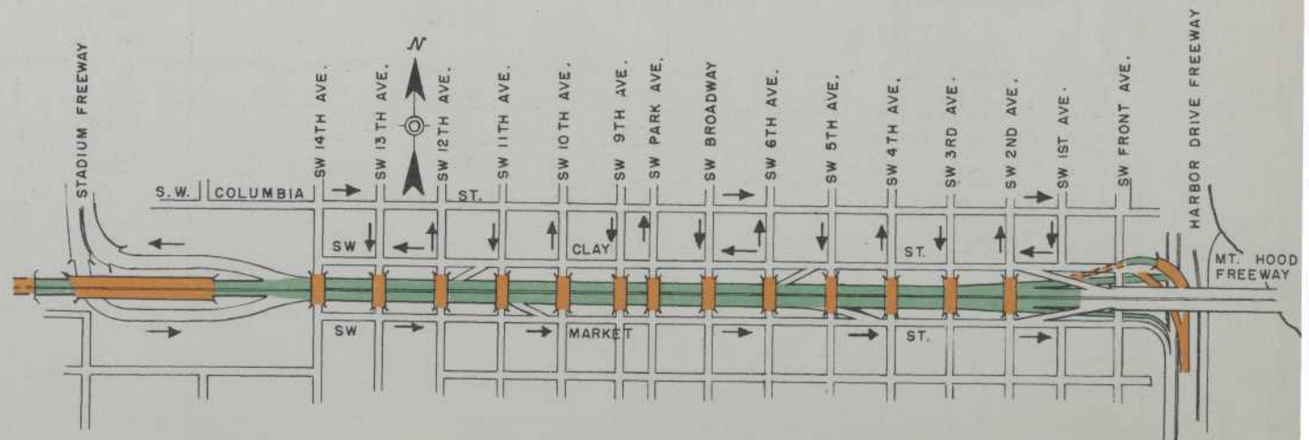
SUCH LOCATION WAS NOT SELECTED AS IT WOULD HAVE CAUSED THE RAMP CONNECTIONS BETWEEN HARBOR DRIVE FREEWAY AND THE MILL-MONTGOMERY DEPRESSEDWAY TO BE MADE IN SUCH CLOSE PROXIMITY TO THE PORTLAND-SALEM FREEWAY INTERCHANGE WITH THE HARBOR DRIVE FREEWAY THAT SOME ADVERSE ALIGNMENT WOULD BE REQUIRED. FURTHER, IT WOULD NOT BE POSSIBLE TO DEVELOP ADEQUATE WEAVING DISTANCE BETWEEN NORTHBOUND TRAFFIC ON HARBOR DRIVE FREEWAY AND NORTHBOUND TRAFFIC ON PORTLAND-SALEM FREEWAY DESTINED FOR HARBOR DRIVE FREEWAY NORTHBOUND AND THE SUNSET FREEWAY WESTBOUND. THERE WOULD BE ADDITIONAL COMPLICATIONS INJECTED INTO THE DESIGN IN MAKING ADEQUATE CONNECTIONS BETWEEN THE SUNSET FREEWAY AND HARBOR DRIVE SOUTHBOUND SO AS TO CARE FOR THOSE TRAFFIC MOVEMENTS THAT WOULD BE DESTINED FOR THE PORTLAND-SALEM FREEWAY AND HARBOR DRIVE FREEWAY. THE COST OF THIS ALTERNATE LOCATION WOULD BE HIGHER THAN FOR THE LOCATION SELECTED AND WOULD NOT GIVE EQUAL TRAFFIC SERVICE TO THE CENTRAL BUSINESS DISTRICT.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
WHEELER AVE.	MURRAY ROAD	2.90	10,000	4	570,000	140,000	710,000	130,000	840,000
MURRAY ROAD	BARNES ROAD EXPRESSWAY	1.90	25,000	4	300,000	140,000	440,000	80,000	520,000
BARNES ROAD EXPRESSWAY	MULTNOMAH COUNTY LINE	1.90	20,000	4	220,000	40,000	260,000	20,000	280,000
WASHINGTON COUNTY LINE	TUNNEL PORTAL	2.59	35,000	6	1,250,000	300,000	1,550,000	ACQUIRED	1,550,000
TUNNEL PORTAL	S.W. 14TH AVE.	0.58	35,000	4	250,000	3,730,000	3,980,000	1,220,000	5,200,000
S.W. 14TH AVE.	HARBOR DRIVE FREEWAY	0.69	50,000	6	1,970,000	1,560,000	3,530,000	5,150,000	8,680,000
TOTAL		10.56			4,560,000	5,910,000	10,470,000	6,600,000	17,070,000

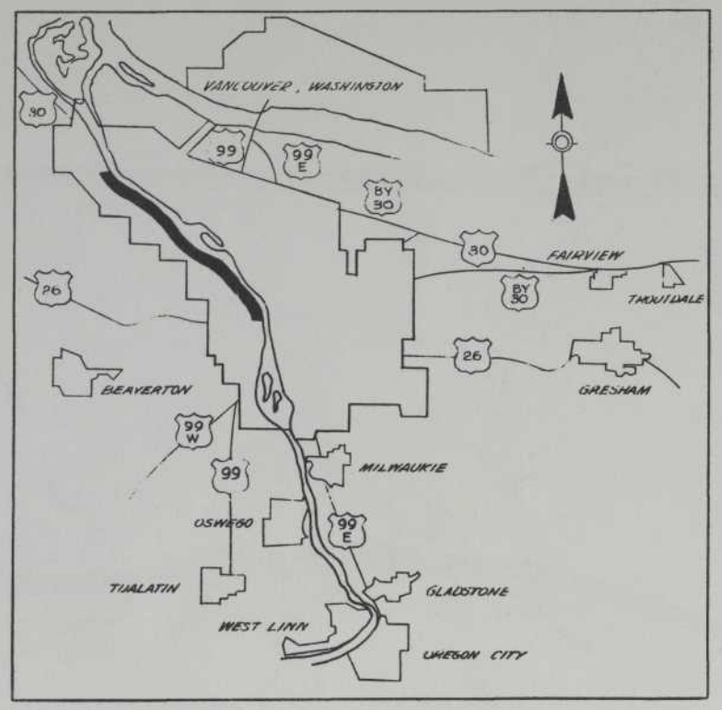




ALTERNATE PLAN



F5 - SUNSET FREEWAY



F6 - INDUSTRIAL FREEWAY (US30)
ST. JOHNS BRIDGE - STEEL BRIDGE

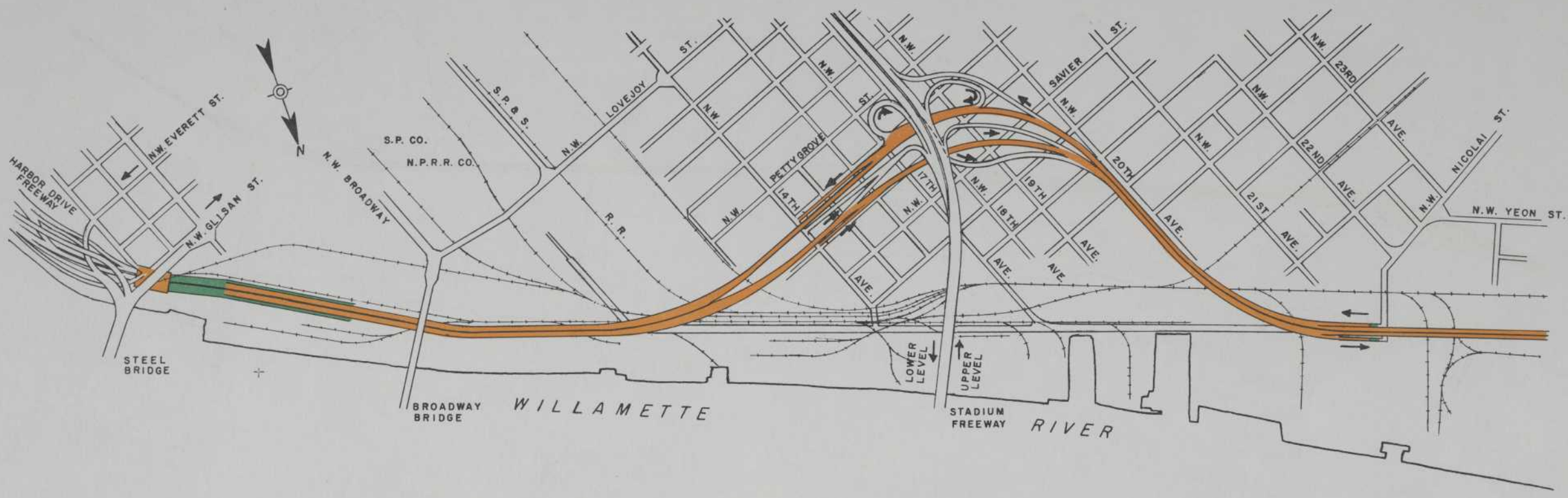
THE INDUSTRIAL FREEWAY APPROXIMATES THE LOCATION OF N.W. FRONT AVENUE THROUGHOUT MOST OF ITS LENGTH HAVING ITS BEGINNING POINT AS A CONTINUATION OF THE INDUSTRIAL EXPRESSWAY WHICH STARTED AT BURLINGTON. THE FREEWAY TRAVERSES VIRGIN ALIGNMENT THROUGH THE NORTHWEST INDUSTRIAL AREA ON VIADUCT SECTION TO THE VICINITY OF N.W. DOANE STREET AT WHICH POINT THE FREEWAY IS ELEVATED ABOVE FRONT AVENUE OTHER THAN WHEN THE LOCATION "SWINGS" SOUTHERLY SO THAT CONNECTION CAN BE MADE WITH THE STADIUM FREEWAY (FREMONT BRIDGE) IN THE VICINITY OF N.W. 18TH AVENUE AND QUIMBY STREET.

THE ADT ON THIS FREEWAY IS EXPECTED TO RANGE BY 1975 FROM 20,000 WEST OF THE STADIUM FREEWAY TO 30,000 EAST THEREOF. THE COMPOSITION OF THE TRAFFIC WILL BE PRIMARILY COMMERCIAL AND INDUSTRIAL IN CHARACTER WITH MANY HOME-TO-WORK TRIPS INTERSPERSED THEREIN. THIS FREEWAY ALSO SERVES A VERY DEFINITE DESIRE FOR TRAVEL, AS WAS EVIDENCED IN THE DESIRE LINE CHART, BETWEEN THE ST. JOHNS AND NORTHWEST AREAS AND THE NORTHWEST INDUSTRIAL DISTRICT AND WEST SIDE CENTRAL BUSINESS DISTRICT.

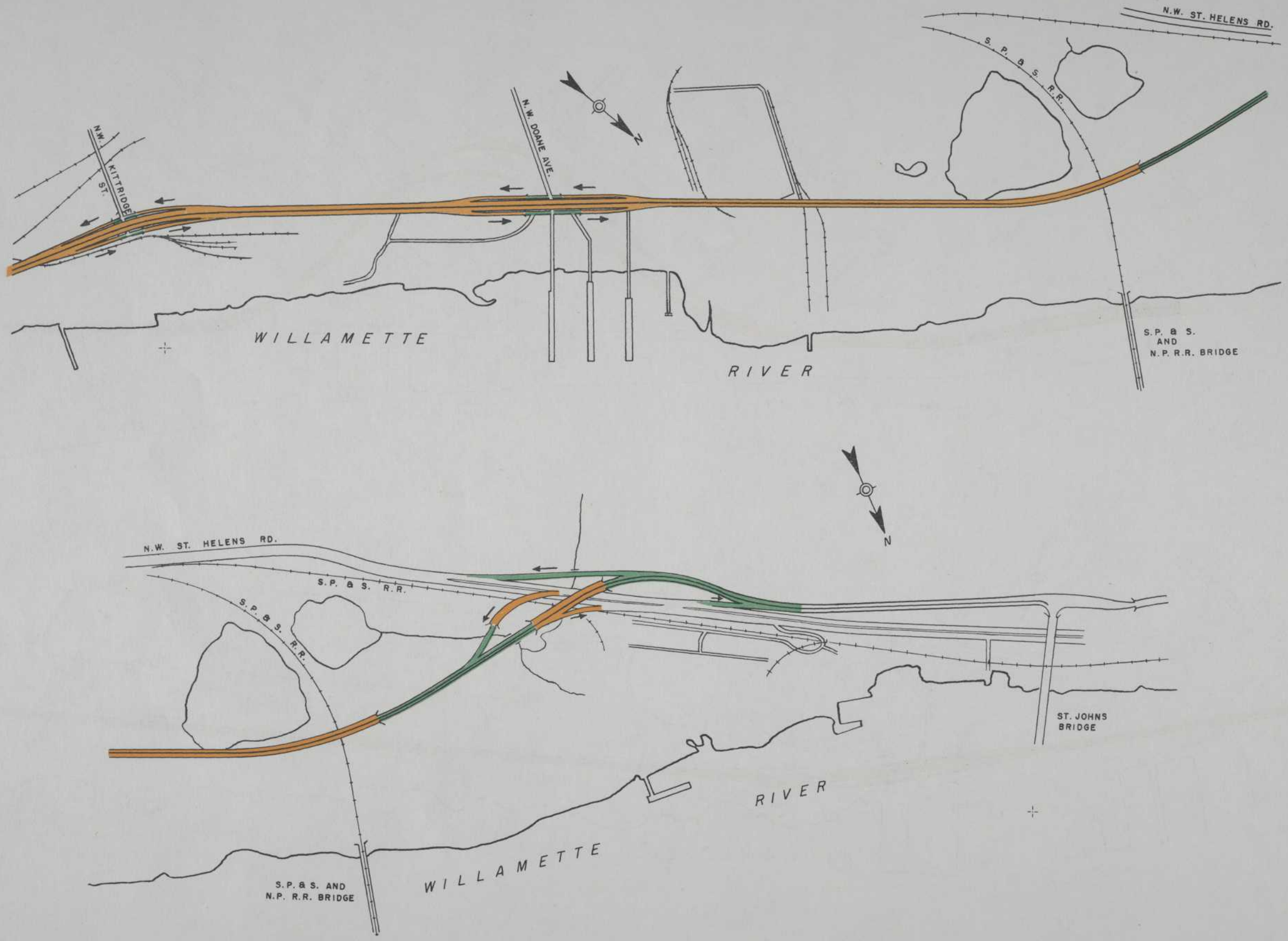
THE INTERCHANGE BETWEEN THE INDUSTRIAL AND STADIUM FREEWAYS INTRODUCED CERTAIN COMPLICATIONS BY REASON OF THE STADIUM FREEWAY, WHEN CROSSING THE WILLAMETTE RIVER, HAVING TO MAINTAIN A VERTICAL CLEARANCE OF 195 FT. ABOVE MEAN-LOW WATER. THE AREA IN WHICH THE ULTIMATE INTERCHANGE DESIGN WAS LOCATED HAS BEEN CLASSED AS AN AREA SUITABLE FOR REDEVELOPMENT AND THUS, THOUGH MANY HOMES WILL BE DISTURBED IN THE CONSTRUCTION OF SUCH INTERCHANGE, THE OVER-ALL EFFECT UPON THE AREA WILL BE AN ADVANTAGEOUS ONE.

THIS ELEVATED FREEWAY WILL BE CONSTRUCTED TO FOUR LANES AND WILL HAVE ACCESSES AT THE ST. JOHNS BRIDGE, N.W. DOANE AVENUE, N.W. KITTRIDGE STREET, N.W. 24TH AVENUE, STADIUM FREEWAY AND AT HARBOR DRIVE FREEWAY.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
ST. JOHNS BRIDGE	N.W. DOANE AVENUE	1.94	20,000	4	120,000	3,500,000	3,620,000	50,000	3,670,000
N.W. DOANE AVENUE	N.W. KITTRIDGE STREET	0.64	25,000	4	70,000	2,160,000	2,230,000	20,000	2,250,000
N.W. KITTRIDGE STREET	N.W. 24TH AVENUE	1.76	25,000	4	40,000	5,640,000	5,680,000	1,060,000	6,740,000
N.W. 24TH AVENUE	HARBOR DRIVE FREEWAY	2.10	30,000	4	70,000	7,900,000	7,970,000	3,870,000	11,840,000
TOTAL		6.44			300,000	19,200,000	19,500,000	5,000,000	24,500,000

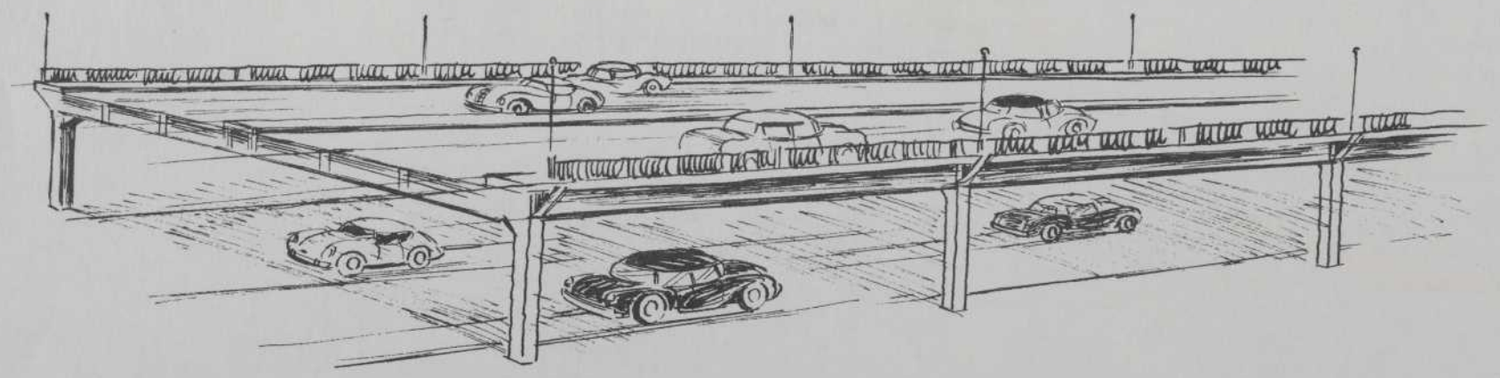


F6—INDUSTRIAL FREEWAY

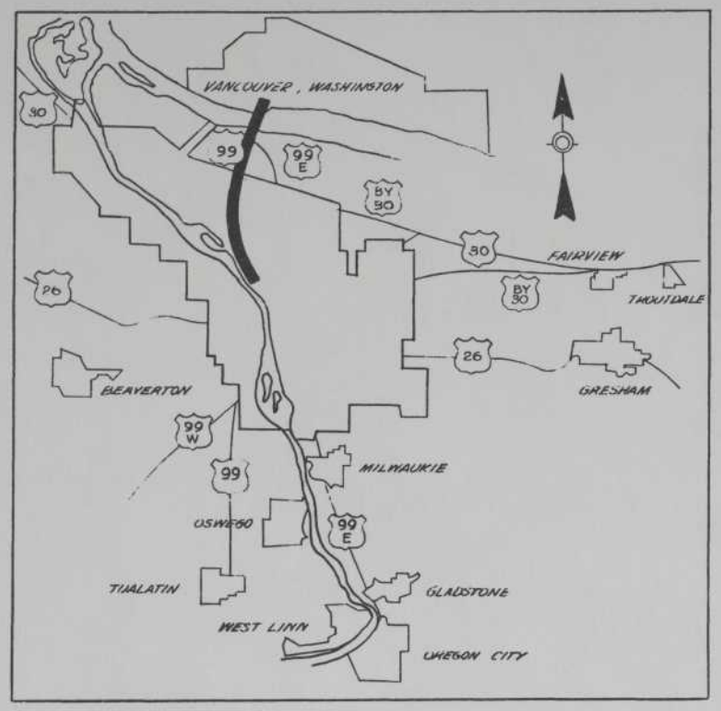


F6-INDUSTRIAL FREEWAY

MODEL OF INDUSTRIAL FREEWAY CONNECTION TO HARBOR DRIVE FREEWAY, LOOKING SOUTH TO STEEL BRIDGE.



TYPICAL ELEVATED SECTION ABOVE N.W. FRONT AVENUE.



F7 - DELAWARE FREEWAY (US99)
VANCOUVER, WASHINGTON - HARBOR DRIVE FREEWAY

THIS FREEWAY CONNECTS WITH THE US99 FREEWAY IN VANCOUVER, WASHINGTON ON THE NORTH BANK OF THE COLUMBIA RIVER. IT THEN EXTENDS SOUTHERLY ON ONE-WAY BRIDGES ACROSS THE COLUMBIA RIVER AND COLUMBIA SLOUGH CONNECTING TO THE PRESENT TRAFFIC INTERCHANGE AT UNION AND DENVER AVENUES. IT THEN EXTENDS SOUTHERLY ALONG THE PRESENT LOCATION OF DENVER AVENUE UTILIZING EXISTING TRAFFIC INTERCHANGES WITH THE PRESENT VANPORT AREA; LEAVES DENVER AVENUE JUST NORTH OF COLUMBIA SLOUGH ON A LOCATION BETWEEN DELAWARE AND WILBUR STREETS UNTIL IT REACHES THE BLUFF; THEN IT FOLLOWS A LOCATION ALONG THE SIDE OF THE BLUFF AREA ABOVE GREELEY AVENUE TO INTERSTATE AVENUE, AND THENCE ALONG THE EXISTING LOCATION OF INTERSTATE AVENUE ON A VIADUCT TO THE HARBOR DRIVE FREEWAY AT N. TILLAMOOK STREET.

THIS FREEWAY LOCATION CARES FOR COMPLETING THE FINAL LINK IN THE US99 INTERSTATE HIGHWAY THROUGH THE PORTLAND AREA TO THE VANCOUVER, WASHINGTON FREEWAY AND IS VITAL IN THE INTER-STATE MOVEMENT OF NOT ONLY COMMODITIES BUT PASSENGER VEHICLES AND TOURIST TRAFFIC. TRAFFIC VOLUMES ON THIS FREEWAY RANGE FROM A MINIMUM OF SOME 25,000 VEHICLES PER DAY IN THE SECTION NORTH OF COLUMBIA BOULEVARD TO SOME 40,000 VEHICLES PER DAY IN THAT SECTION BETWEEN N. KILLINGSWORTH STREET AND N. INTERSTATE AVENUE. THE TOTAL FLOW OF INTER-STATE TRAFFIC BETWEEN VANCOUVER, WASHINGTON, AND PORTLAND, OREGON, WILL, BY 1975, AMOUNT TO SOME 80,000 VEHICLES PER DAY. IT IS EXPECTED THAT 50,000 OF THESE VEHICLES WILL REMAIN ON THE TWIN BRIDGES AND 30,000 WILL USE A NEW BRIDGE ON THE PROPOSED LAURELHURST FREEWAY.

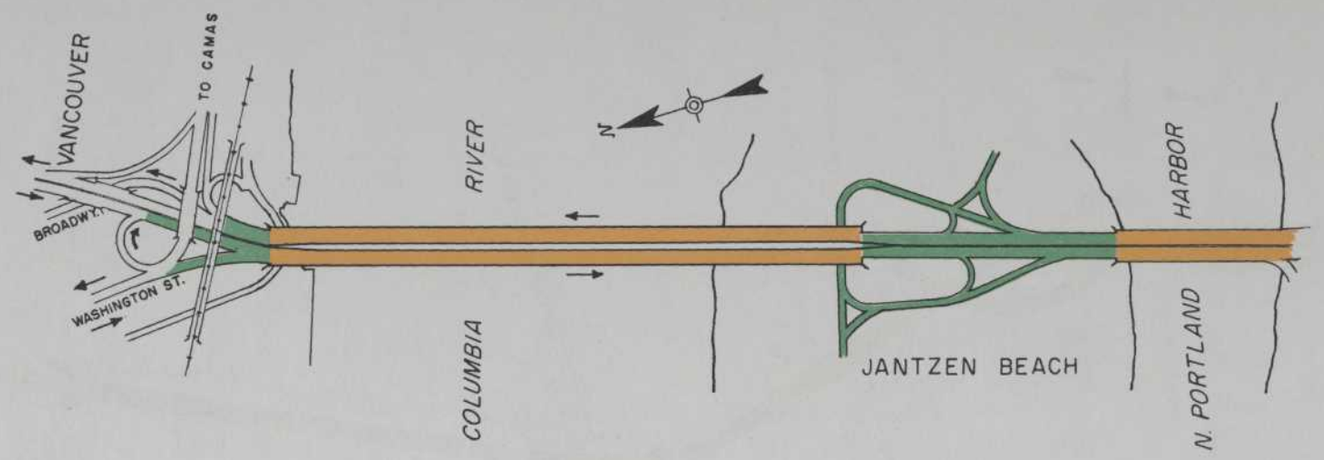
THE TWIN ONE-WAY BRIDGES ACROSS THE COLUMBIA RIVER AND COLUMBIA SLOUGH WILL EACH BE CONSTRUCTED TO THREE LANES AND SIX LANES OF TRAFFIC WILL BE PLANNED THROUGH THE UNION AND DENVER AVENUE INTERCHANGE. SOUTH OF THIS POINT AND THROUGHOUT THE REMAINDER OF THE FREEWAY IT WILL BE CONSTRUCTED TO FOUR LANES. TRAFFIC MAY USE THE FACILITY THROUGH INTERCHANGES AS SHOWN ON THE OPPOSITE PAGE.

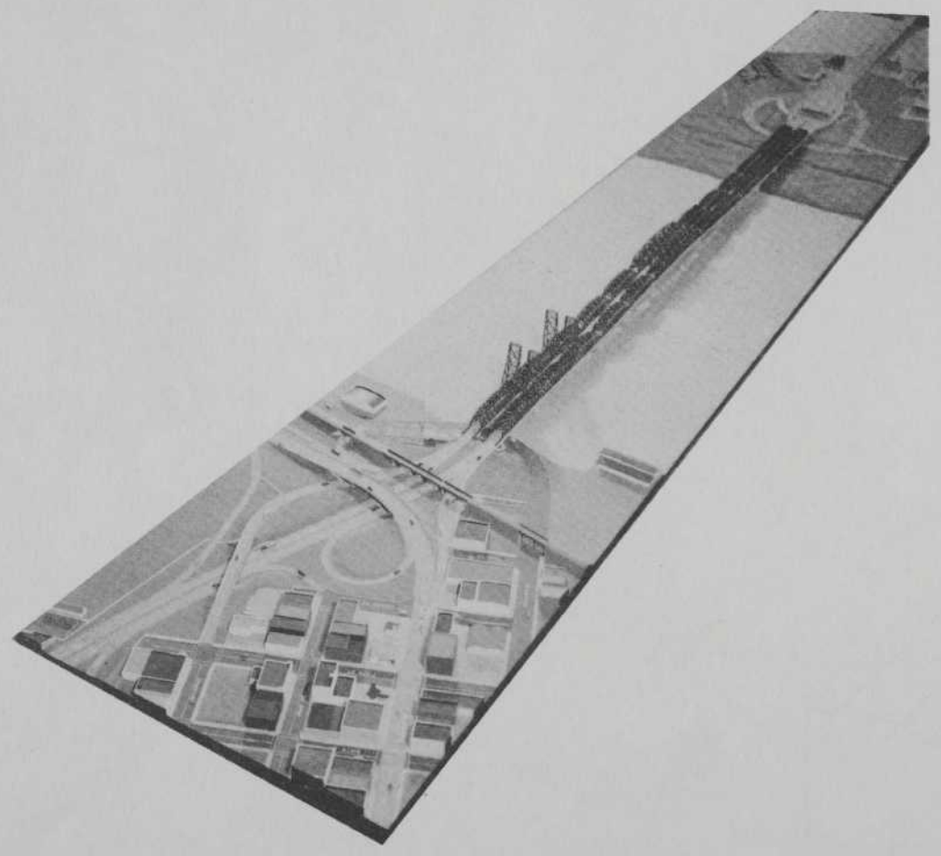
THE PROPOSED ONE-WAY BRIDGES ACROSS THE COLUMBIA RIVER ARE TO BE CONSTRUCTED JOINTLY BY THE WASHINGTON TOLL BRIDGE AUTHORITY AND THE OREGON STATE HIGHWAY DEPARTMENT AND INSOFAR AS THE CROSSING OF THE COLUMBIA RIVER PROPER IS CONCERNED, THESE STRUCTURES ARE TO BE SUBJECTED TO TOLL UNTIL THE COST OF IMPROVEMENT HAS BEEN PAID.

ALTHOUGH IT WOULD NOT BE NECESSARY TO CONSTRUCT THIS OVER-ALL PROJECT AT AN EARLY DATE, THE PRESENT CONGESTION EXISTING ON INTERSTATE AVENUE BETWEEN N. GREELEY AVENUE AND N. TILLAMOOK STREET SHOULD WARRANT EARLY ATTENTION.

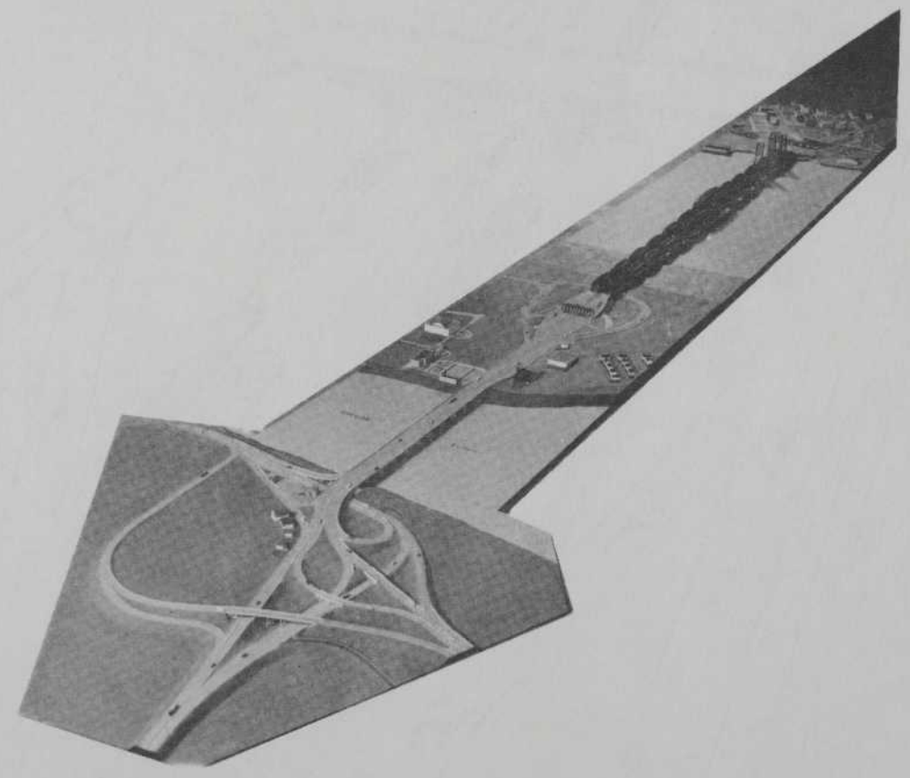
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
VANCOUVER, WASHINGTON	N.E. UNION AVENUE	1.16	50,000	6	- -	- -	- -	- -	14,000,000 1/
N.E. UNION AVENUE	VANPORT INTERCHANGE	0.61	35,000	4	135,000	35,000	170,000	- -	170,000
VANPORT INTERCHANGE	N. LOMBARD STREET	1.21	30,000	4	480,000	750,000	1,230,000	1,320,000	2,550,000
N. LOMBARD STREET	N. KILLINGSWORTH STREET	1.05	35,000	4	750,000	150,000	900,000	1,680,000	2,580,000
N. KILLINGSWORTH STREET	STADIUM FREEWAY	1.36	40,000	4	550,000	470,000	1,020,000	1,560,000	2,580,000
STADIUM FREEWAY	HARBOR DRIVE FREEWAY	0.61	30,000	4	40,000	1,520,000	1,560,000	760,000	2,320,000
TOTAL		6.00			1,955,000	2,925,000	4,880,000	5,320,000	10,200,000

1/ TOTAL COST OF ONE-WAY BRIDGES, TOLL PLAZA AND OTHER ADJUSTMENTS RELATING THERETO TO BE PAID FOR THROUGH TOLL COLLECTION.



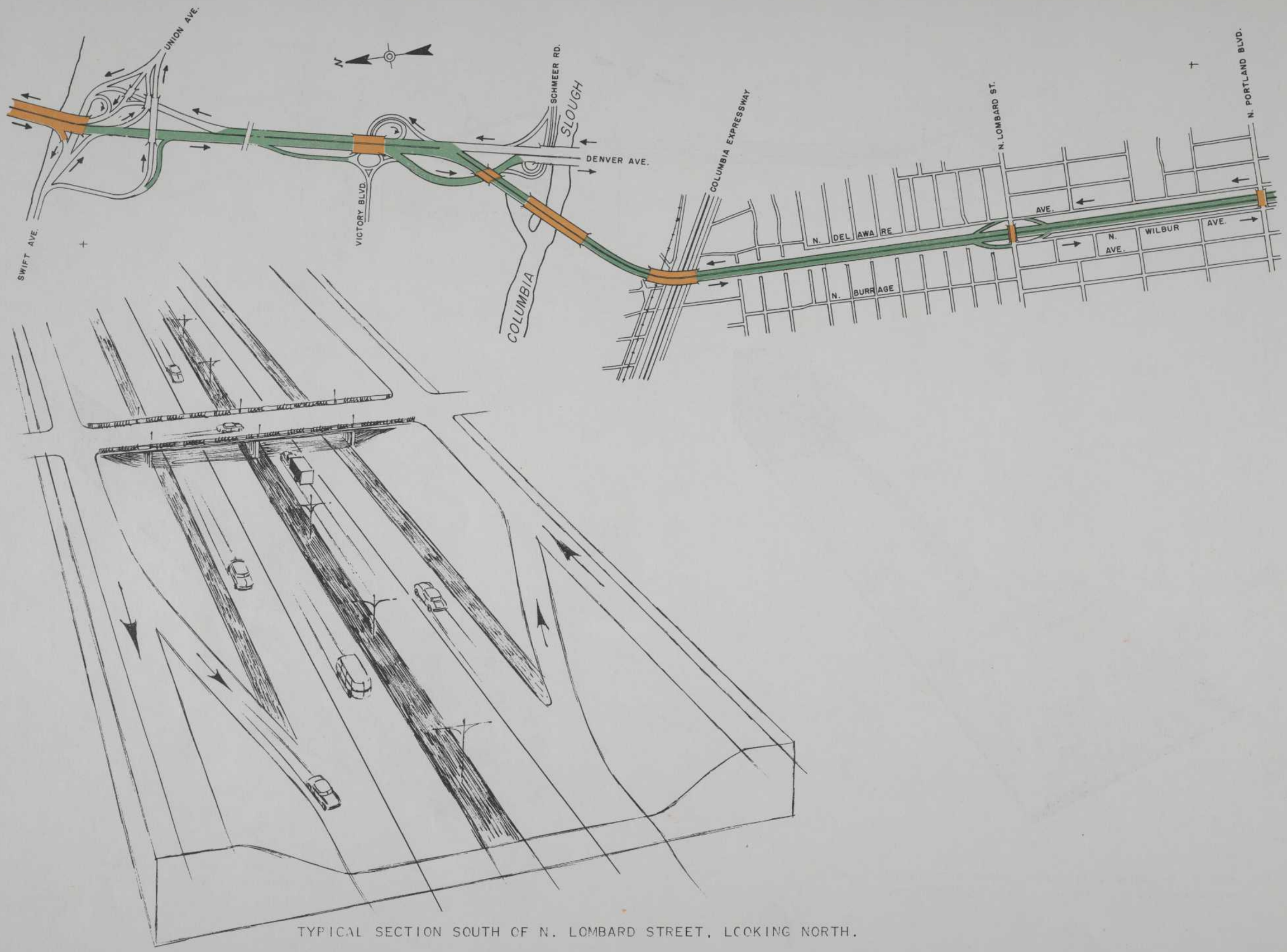


MODEL OF US99 FREEWAY CONNECTIONS IN VANCOUVER, WASHINGTON, TO DELAWARE FREEWAY AND TWIN INTERSTATE BRIDGES, LOOKING SOUTHWESTERLY.



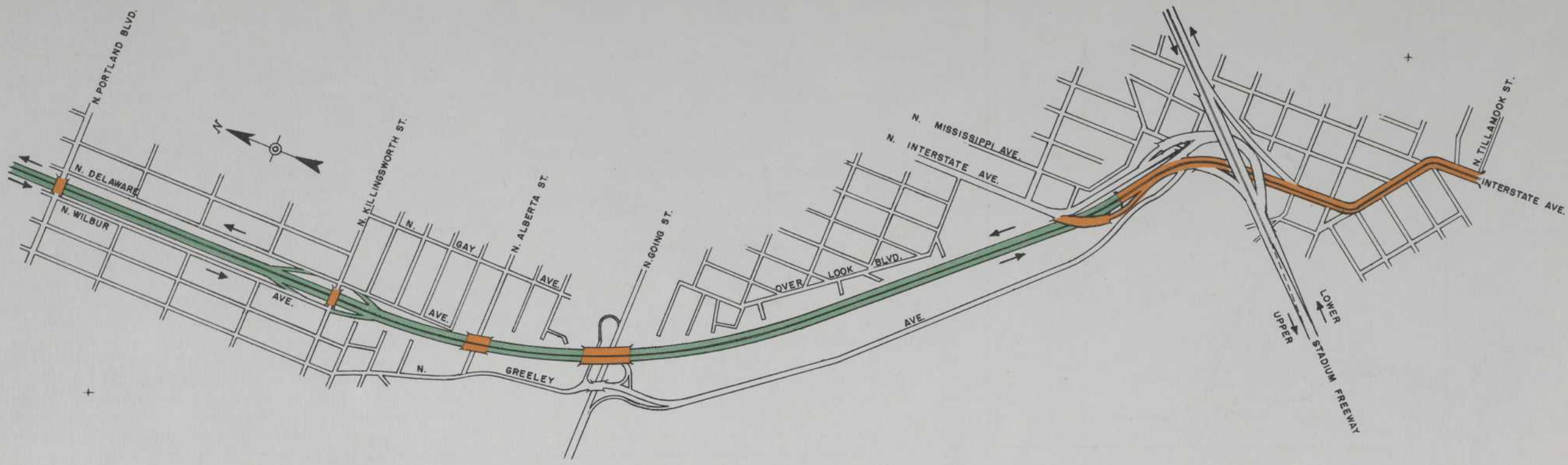
MODEL OF UNION AND DENVER AVENUE INTERCHANGE CONNECTIONS TO DELAWARE FREEWAY WITH INTERSTATE BRIDGES IN BACKGROUND, LOOKING NORTHWESTERLY.

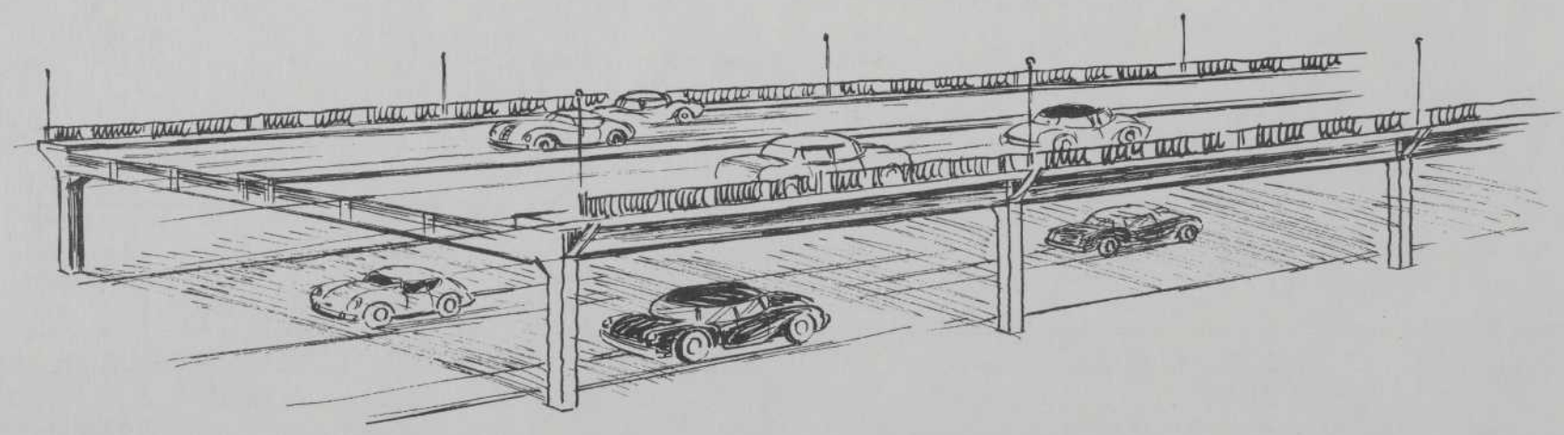
F7-DELAWARE FREEWAY



TYPICAL SECTION SOUTH OF N. LOMBARD STREET, LOOKING NORTH.

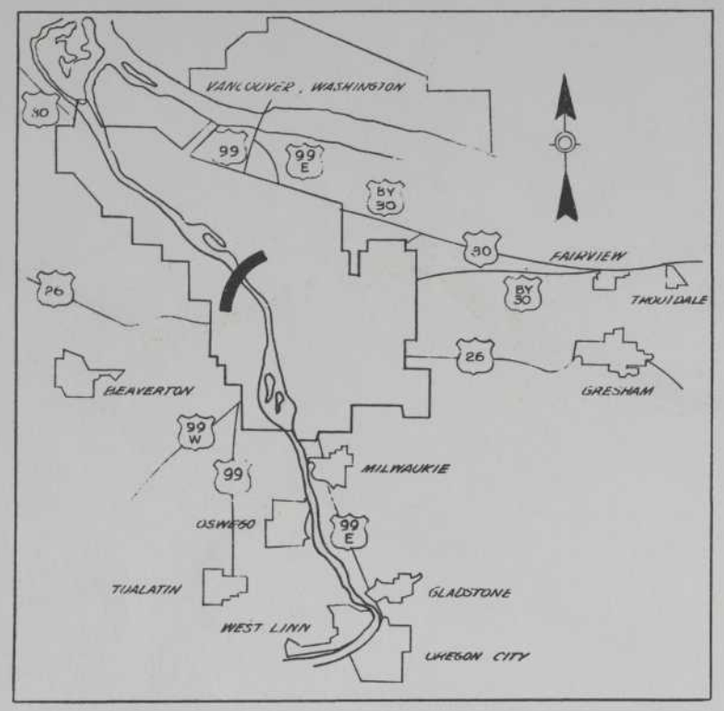
F7-DELAWARE FREEWAY





TYPICAL ELEVATED SECTION ABOVE N. INTERSTATE AVENUE NORTH OF N. RUSSELL STREET

F7-DELAWARE FREEWAY



F8 - STADIUM FREEWAY (US99-US30 ALTERNATE)
SUNSET FREEWAY - FREMONT FREEWAY

THE STADIUM FREEWAY IS ELEVATED AND APPROXIMATES THE LOCATION OF 18TH AVENUE IN WEST SIDE PORTLAND NORTH OF THE SUNSET FREEWAY. IT THEN CROSSES THE WILLAMETTE RIVER ON A TWO-LEVEL EIGHT-LANE SUSPENSION BRIDGE AND CROSSES APPROXIMATELY THROUGH THE INTERSECTION OF N. INTERSTATE AVENUE AND GREELEY AVENUE ON THE EAST SIDE TERMINATING AT AN INTERSECTION WITH THE FREMONT FREEWAY AT VANCOUVER AVENUE. THIS HIGHWAY LOCATION SERVES AS A RELIEF FOR THE NORTH-SOUTH DESIRE LINES OF FLOW AS PRESENTLY EXIST. SUCH NORTH-SOUTH TRAVEL NOW MUST USE THE BROADWAY AND STEEL BRIDGES AND TO A LESSER EXTENT THE BURNSIDE BRIDGE IN CROSSING BETWEEN NORTH AND WEST SIDE PORTLAND. THIS LOCATION ALSO FUNCTIONS AS A CIRCUMFERENTIAL ROUTING AROUND THE WEST SIDE CENTRAL BUSINESS DISTRICT WHEN COUPLED WITH THE INDUSTRIAL, HARBOR DRIVE, AND SUNSET FREEWAYS. IT WILL SERVE TO RELIEVE HARBOR DRIVE FREEWAY, US99, THE BANFIELD FREEWAY, AND TO INTERCHANGE NORTH-SOUTH AND EAST-WEST TRAFFIC.

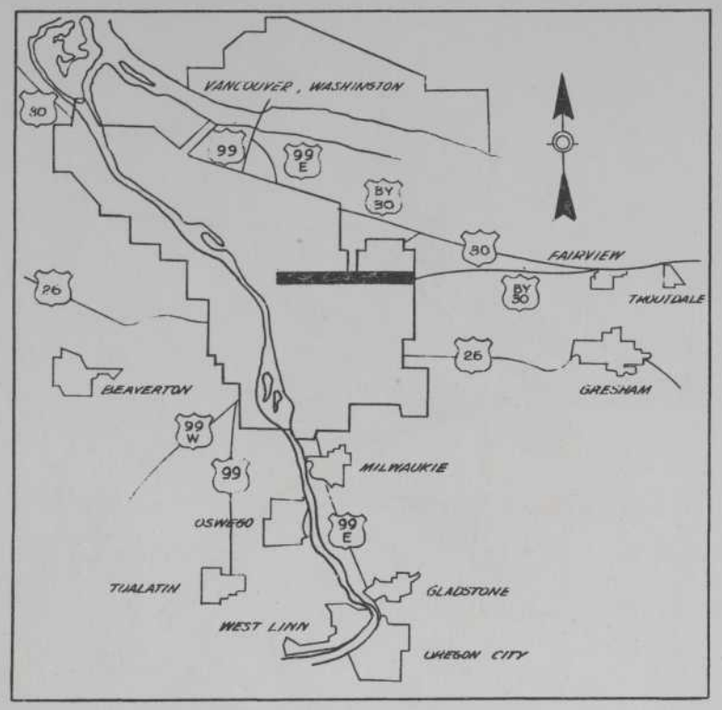
IT IS EXPECTED THAT THIS MULTIPLE USE OF THE FREEWAY PROPER WILL CAUSE CONSIDERABLE TRAFFIC TO ATTRACT ITSELF TO IT AND THAT THE FREMONT BRIDGE WILL HAVE AN AVERAGE DAILY TRAFFIC BY 1975 OF SOME 80,000 AND THAT THE SOUTHERLY SECTION OF THE FREEWAY WILL CARRY SOME 60,000 VEHICLES PER DAY. ACCESS IS AS SHOWN ON MAP ON OPPOSITE PAGE. THUS, IT WILL BE ONE OF THE MORE HEAVILY TRAVELED FREEWAYS IN THE PORTLAND AREA. IT WILL BE CONSTRUCTED TO SIX LANES THROUGHOUT AND THE STRUCTURE ACROSS THE RIVER WILL BE OF SUSPENSION TYPE AND WILL HAVE A VERTICAL CLEARANCE OF 195 FT. ABOVE MEAN-LOW WATER.

ALTERNATE LOCATIONS FOR THIS PARTICULAR FREEWAY WERE STUDIED ALONG THE LINE OF 14TH AVENUE. THE 1944 STUDY MADE BY THE CITY OF PORTLAND AND THE STATE HIGHWAY DEPARTMENT USED THIS LOCATION. HOWEVER, BECAUSE OF THE REQUIREMENT OF MAINTAINING 195 FT. OF CLEARANCE BETWEEN MEAN-LOW WATER AND A PROPOSED BRIDGE ACROSS THE LOWER HARBOR, IT BECAME NECESSARY TO SHIFT THE LOCATION WESTERLY SO THAT ACCESSES COULD BE MADE WITHIN REASONABLE LIMITS TO THE NORTHWEST INDUSTRIAL AREA. WERE THE LOCATION OF SUCH A HIGH-LEVEL STRUCTURE MADE ALONG 14TH AVENUE, IT WOULD NOT BE POSSIBLE TO DEVELOP CONNECTIONS INTO THE NORTHWEST AREA UNTIL SOME POINT SOUTH OF N.W. LOVEJOY STREET.

IT WAS ALSO FOUND THAT THE 18TH AVENUE LOCATION CAN BE ACCOMPLISHED FOR A LESSER EXPENDITURE FOR RIGHT OF WAY. MOREOVER, WERE A FREEWAY CONSTRUCTED ALONG THE LOCATION OF 14TH AVENUE, IT WOULD TEND TO ENCIRCLE THE CENTRAL BUSINESS DISTRICT WITHIN SOMEWHAT NARROW CONFINES; WHEREAS BY A SHIFTING OF THE LOCATION OF THIS FREEWAY WESTERLY TO 18TH AVENUE, THE ENCIRCLING OF THE CENTRAL BUSINESS DISTRICT IS ACCOMPLISHED WITHOUT A CONSTRICTION OF ITS FUTURE GROWTH ON THE WEST. IN THE IMPROVEMENT AND CONSTRUCTION OF THE STADIUM FREEWAY, IT WILL BE NECESSARY TO IMPROVE SEVERAL OF THE EAST-WEST LOCAL USE STREETS SO THAT DIRECT ACCESS CAN BE MADE BETWEEN THE NORTHWEST INDUSTRIAL, WHOLESALE AND RESIDENTIAL AREAS AND THIS FREEWAY.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
SUNSET FREEWAY	N.W. EVERETT STREET	0.84	60,000	6	20,000	2,640,000	2,660,000	2,040,000	4,700,000
N.W. EVERETT STREET	INDUSTRIAL FREEWAY	0.49	75,000	6	- -	2,130,000	2,130,000	3,380,000	5,510,000
INDUSTRIAL FREEWAY	N. VANCOUVER AVENUE	1.08	80,000	6	- -	17,500,000	17,500,000	1,440,000	18,940,000
TOTAL		2.41			20,000	22,270,000	22,290,000	6,860,000	29,150,000

F8 - STADIUM FREEWAY



F9 - FREMONT FREEWAY (US30 ALTERNATE)
STADIUM FREEWAY (N. VANCOUVER AVENUE) - BANFIELD FREEWAY

THE FREMONT FREEWAY IS LOCATED JUST SOUTH OF FREMONT STREET APPROXIMATING THE GENERAL LOCATION OF KLICKITAT STREET. THIS FREEWAY CARES FOR AN EAST-WEST DESIRE LINE MOVING BETWEEN THE NORTH AND NORTHEAST DISTRICTS OF PORTLAND AND AT THE SAME TIME IS AN ALTERNATE FOR THE INTERSTATE HIGHWAY ROUTE OF US30. THIS WOULD ALLOW RELIEF FOR THE BANFIELD FREEWAY WHEN IT BECOMES DEFICIENT IN CAPACITY.

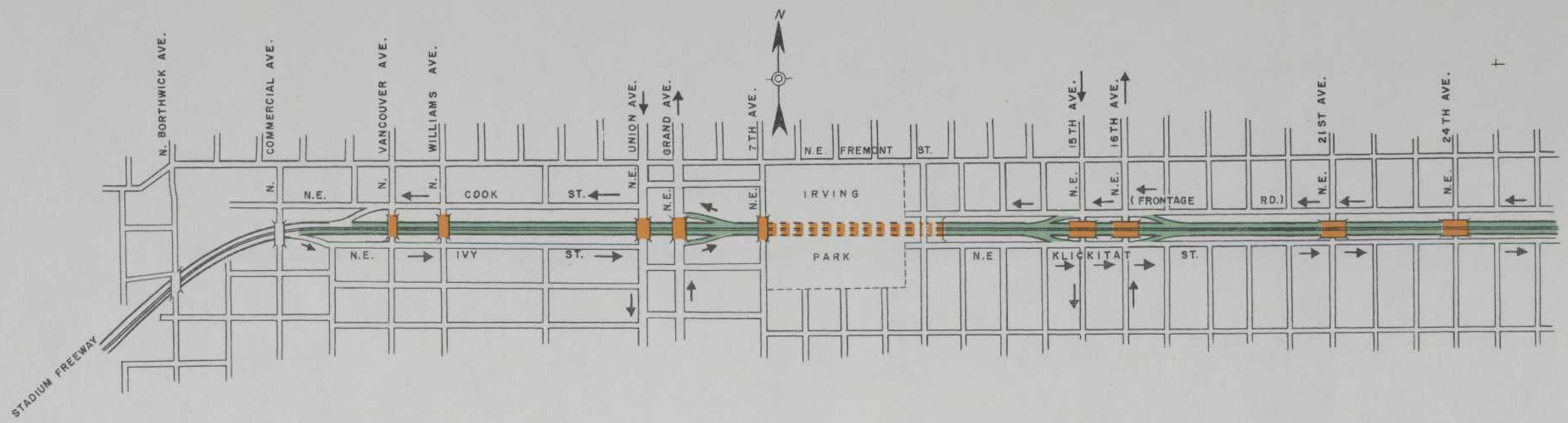
THE ADT ON THE FREMONT FREEWAY IS EXPECTED TO RANGE FROM 35,000 IN THE WESTERLY SECTION BETWEEN THE DELAWARE FREEWAY AND THE 15TH-16TH AVENUE ONE-WAY COUPLET TO SOME 10,000 IN THE EXTREME EASTERLY SECTION. THIS FREEWAY WILL BE BUILT TO FOUR LANES THROUGHOUT ITS ENTIRE LENGTH, WITH PROVISIONS MADE IN THE ACQUISITIONS OF RIGHT OF WAY FOR EXPANSION TO SIX LANES.

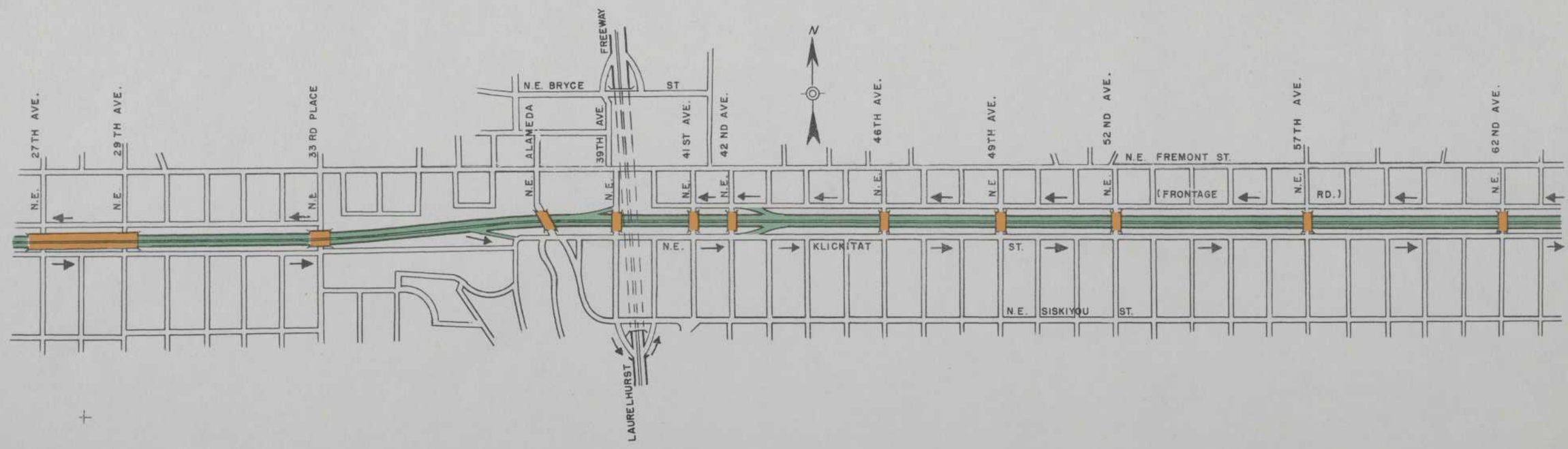
THIS FREEWAY, AS STATED PREVIOUSLY, CARES FOR CONSIDERABLE TRAFFIC MOVING BETWEEN THE NORTH AND NORTHEAST DISTRICTS WHICH IS COMPOSED NOT ONLY OF RESIDENTIAL USAGE BUT HOME-TO-WORK TRIPS AS WELL AS AN EXCHANGE OF TRAFFIC BETWEEN FREEWAYS; THUS, IT HAS A MULTIPLE PURPOSE USAGE.

THE FREEWAY, GENERALLY SPEAKING, WILL BE BUILT AS A DEPRESSED SECTION WITH FLANKING STREETS SERVING AS FRONTAGE ROADS THROUGHOUT MOST OF ITS LENGTH. IT IS, IN THE INSTANCE OF THIS REPORT, ASSUMED THAT A TUNNEL WILL BE CONSTRUCTED THROUGH ROCKY BUTTE.

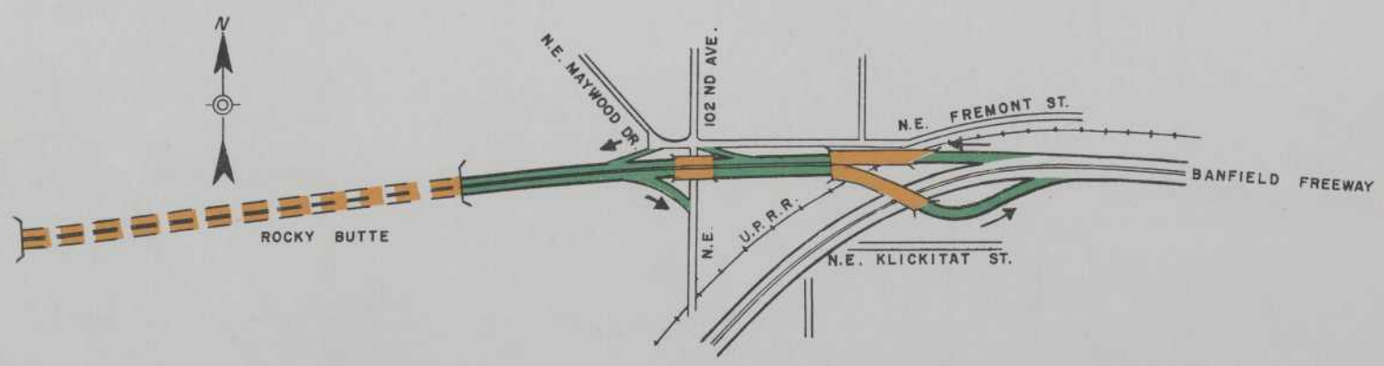
INTERCHANGE BETWEEN THIS FREEWAY AND OTHER FREEWAYS, EXPRESSWAYS AND MAJOR STREETS HAS BEEN PLANNED. NO DIRECT INTERCHANGE BETWEEN THE CASCADE FREEWAY AND THE FREMONT FREEWAY IS CONTEMPLATED AS THE CASCADE FREEWAY WILL BE IN TUNNEL SECTION CROSSING UNDER THE FREMONT FREEWAY; HOWEVER, THROUGH UTILIZATION OF N.E. 82ND AVENUE AND INTERCHANGES IMMEDIATELY ADJACENT, IT WILL BE POSSIBLE FOR TRAFFIC TO INTERCHANGE BETWEEN THESE TWO MAJOR ROUTINGS.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
N. VANCOUVER AVENUE	15TH-16TH ONE-WAY COUPLET	1.36	35,000	4	1,030,000	910,000	1,940,000	3,600,000	5,540,000
15TH-16TH ONE-WAY COUPLET	LAURELHURST FREEWAY	1.29	25,000	4	620,000	720,000	1,340,000	3,940,000	5,280,000
LAURELHURST FREEWAY	N.E. SANDY BOULEVARD	1.50	35,000	4	1,390,000	590,000	1,980,000	3,600,000	5,580,000
N.E. SANDY BOULEVARD	CASCADE FREEWAY	0.64	20,000	4	700,000	220,000	920,000	1,420,000	2,340,000
CASCADE FREEWAY	BANFIELD FREEWAY	1.42	10,000	4	530,000	4,680,000	5,210,000	1,010,000	6,220,000
TOTAL		6.21			4,270,000	7,120,000	11,390,000	13,570,000	24,960,000



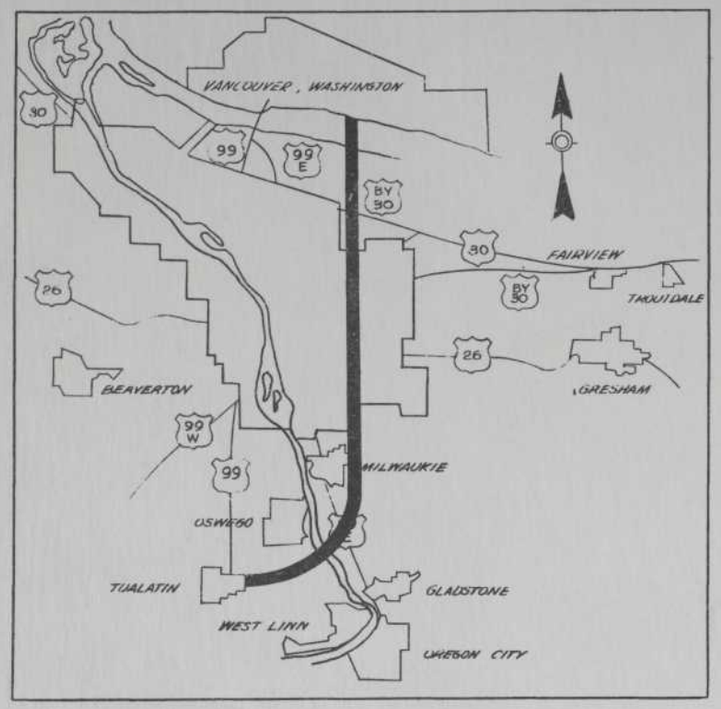


F9 - FREMONT FREEWAY (US 30 ALTERNATE)



F9 - FREMONT FREEWAY (US 30 ALTERNATE)

ROCKY BUTTE TUNNEL PORTALS, LOOKING EAST.



F10 - LAURELHURST FREEWAY (US99 ALTERNATE)
COLUMBIA RIVER - PORTLAND-SALEM FREEWAY

THE LAURELHURST FREEWAY TRAVERSES THE CENTRAL EAST SIDE RESIDENTIAL AREA OF PORTLAND ON AN APPROXIMATE LOCATION OF 39TH AVENUE THROUGH MOST OF THE AREA. REFERENCE TO THE ILLUSTRATION ON MAJOR DIRECTIONAL DESIRE LINES SHOWS THAT THIS FREEWAY IN ITS PRESENT LOCATION IS SOMEWHAT EAST OF THE NORTH-SOUTH DESIRE LINE WHICH APPROXIMATES 30TH AVENUE. THE LOCATION OF THIS FREEWAY COULD BE ANYWHERE BETWEEN 25TH AND 45TH AVENUES AND IN THE EVENT THAT THE EASTSIDE EXPRESSWAY AND THE 15TH-16TH AVENUE ONE-WAY COUPLET ARE NOT BUILT AT A REASONABLY EARLY DATE, IT WOULD BE WELL TO GIVE CONSIDERATION TO SHIFTING THE LOCATED LINE FOR THIS FREEWAY WESTERLY TO IN THE VICINITY OF 30TH AVENUE. THE NORTHERLY AND SOUTHERLY EXTREMITIES OF THE OVER-ALL LAURELHURST FREEWAY WOULD REMAIN MORE OR LESS AS THEY ARE CONCEIVED AT THE PRESENT TIME--THAT IS, NORTH OF COLUMBIA EXPRESSWAY AND SOUTH OF POWELL BOULEVARD.

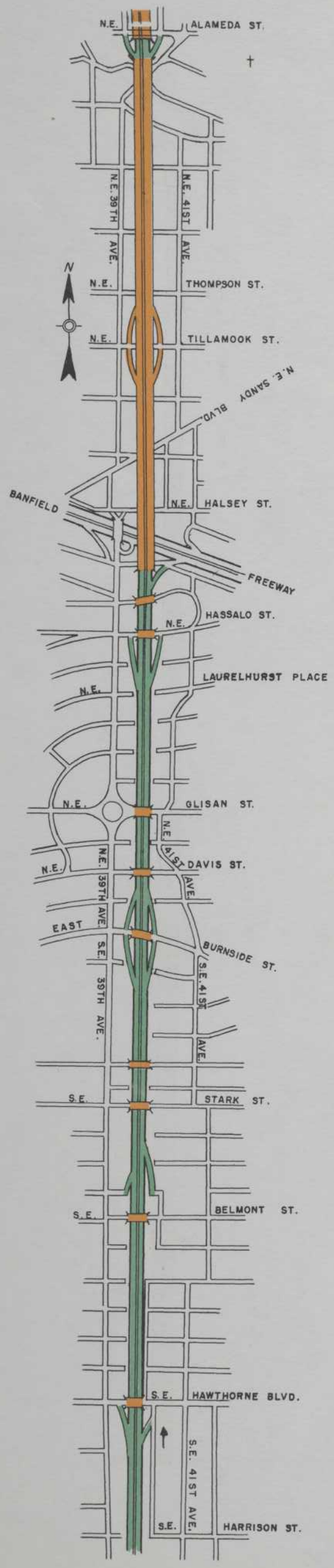
THIS FREEWAY CARRIES THROUGHOUT ITS ENTIRE SECTION ONE OF THE HEAVIER TRAFFIC LOADS ON ANY OF THE FREEWAYS IN THE AREA. IT HAS VOLUMES IN 1975 RANGING FROM 50,000 IN THE CENTRAL PORTION TO A MINIMUM OF 8,000 ON ITS MOST SOUTHERLY PROJECTION. VOLUMES OF 30,000 ARE EXPECTED ON A NEW PROPOSED STRUCTURE ACROSS THE COLUMBIA RIVER. SUCH COLUMBIA RIVER BRIDGE CONNECTS AN EXTENSION OF THIS FREEWAY WITH US99 NORTH OF VANCOUVER, WASHINGTON. THE USE OF THIS ROUTING SERVES AS AN ALTERNATE FOR US99 INTERSTATE HIGHWAY SO AS TO RELIEVE TRAFFIC THROUGH THE WEST SIDE CENTRAL BUSINESS DISTRICT OF PORTLAND AS WELL AS VANCOUVER, WASHINGTON. THIS FREEWAY WILL ALLOW A MORE DIRECT CONNECTION FOR INTER-STATE MOVEMENT AT THE SAME TIME ACCOMMODATING A CONSIDERABLE VOLUME OF INTRA-STATE AND LOCAL TRAFFIC.

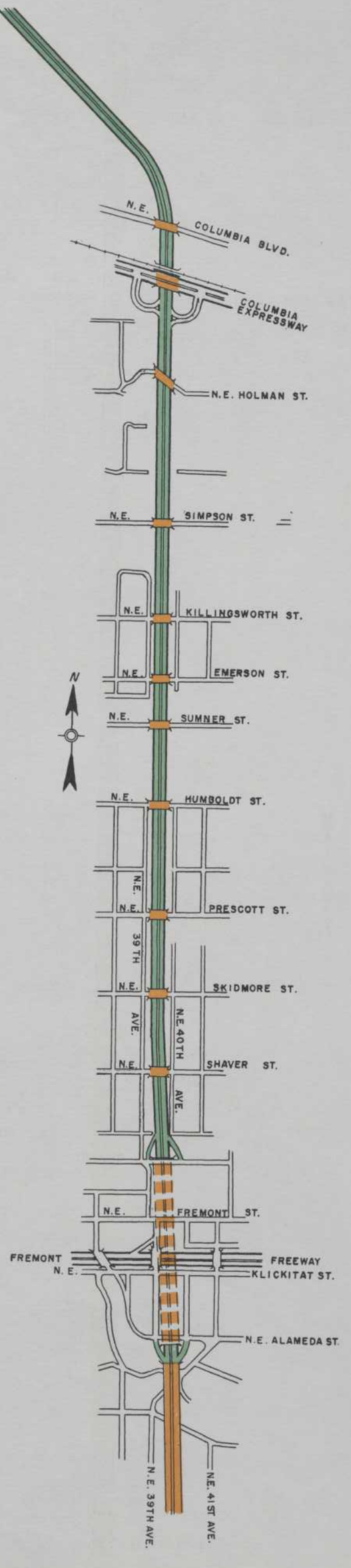
THROUGHOUT MOST OF THE LOCATION, THE FREEWAY IS DEPRESSED; HOWEVER, DUE TO TOPOGRAPHIC CONTROLS AND BUILT UP AREAS, SOME OF THE FREEWAY, AS WILL BE NOTED ON THE ILLUSTRATION ON THE OPPOSITE PAGE, IS IN TUNNEL OR ON VIADUCT SECTION. IT HAS BEEN ASSUMED FOR PURPOSES OF THIS REPORT THAT FOUR LANES WOULD BE CONSTRUCTED AT THE OUTSET THROUGH THE ENTIRE SECTION, BUT THAT RIGHT OF WAY WOULD BE ACQUIRED FROM OAK GROVE NORTHERLY TO THE WASHINGTON STATE LINE FOR ULTIMATE DEVELOPMENT OF SIX LANES OF TRAFFIC SHOULD THE NEED ARISE.

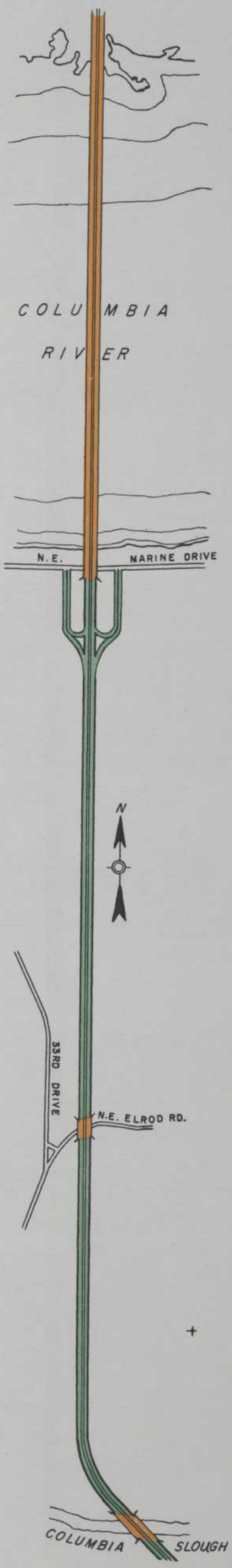
ACCESS WOULD BE AS SHOWN ON THE ILLUSTRATION ON THE OPPOSITE PAGE BUT GENERALLY SPEAKING ALL FREEWAYS, EXPRESSWAYS AND MAJOR STREETS INTERSECTING THE LAURELHURST FREEWAY WOULD BE ACCOMMODATED--ACCESS WOULD ALSO BE PLANNED SO THAT MAJOR NEIGHBORHOODS WOULD BE ABLE TO USE THIS FREEWAY.

IT IS REALIZED THAT THE LOCATION OF THIS FREEWAY BISECTS THE HOLLYWOOD BUSINESS DISTRICT AND IF THE COST OF THE RIGHT OF WAY IS TOO GREAT AND THE OBJECTIONS TOO MANY, INVESTIGATION WILL BE MADE OF ALTERNATE LOCATIONS NEAR 30TH AVENUE OR NEAR 45TH AVENUE. TIME DOES NOT PERMIT THESE RATHER DETAILED STUDIES AS OF NOW.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
COLUMBIA RIVER BRIDGE		1.00	30,000	4	- -	4,250,000*	4,250,000*	150,000	4,400,000
MARINE DRIVE	COLUMBIA EXPRESSWAY	2.18	30,000	4	1,050,000	410,000	1,460,000	200,000	1,660,000
COLUMBIA EXPRESSWAY	FREMONT FREEWAY	1.49	40,000	4	690,000	500,000	1,190,000	2,290,000	3,480,000
FREMONT FREEWAY	EAST BURNSIDE STREET	1.81	45,000	4	840,000	4,140,000	4,980,000	3,170,000	8,150,000
EAST BURNSIDE STREET	MT. HOOD FREEWAY	1.29	50,000	4	1,210,000	390,000	1,600,000	2,690,000	4,290,000
MT. HOOD FREEWAY	SELLWOOD FREEWAY	2.74	45,000	4	1,850,000	2,930,000	4,780,000	4,740,000	9,520,000
SELLWOOD FREEWAY	OATFIELD ROAD EXPRESSWAY	3.53	28,000	4	950,000	1,540,000	2,490,000	2,300,000	4,790,000
OATFIELD ROAD EXPRESSWAY	OSWEGO HIGHWAY	1.79	12,000	4	550,000	2,130,000	2,680,000	1,050,000	3,730,000
OSWEGO HIGHWAY	PORTLAND-SALEM FREEWAY	5.00	8,000	4	1,320,000	560,000	1,880,000	220,000	2,100,000
TOTAL		20.83			8,460,000	16,850,000	25,310,000	16,810,000	42,120,000
		* OREGON'S 50 PER CENT SHARE OF COST.							

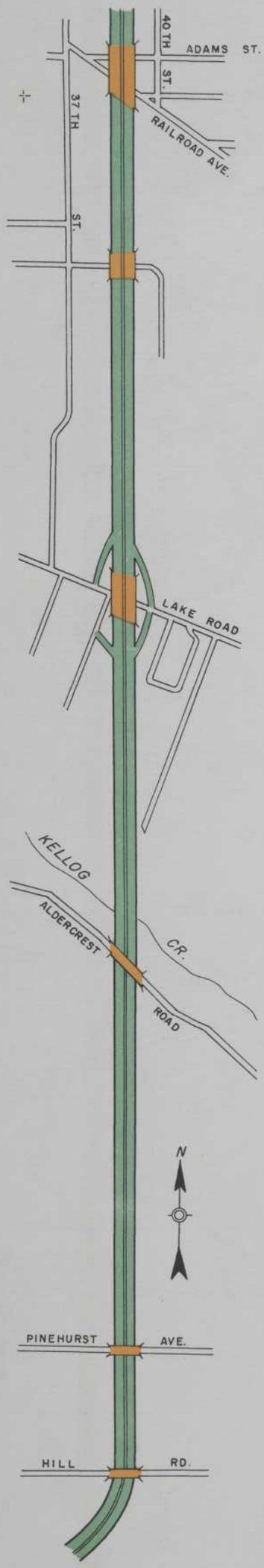


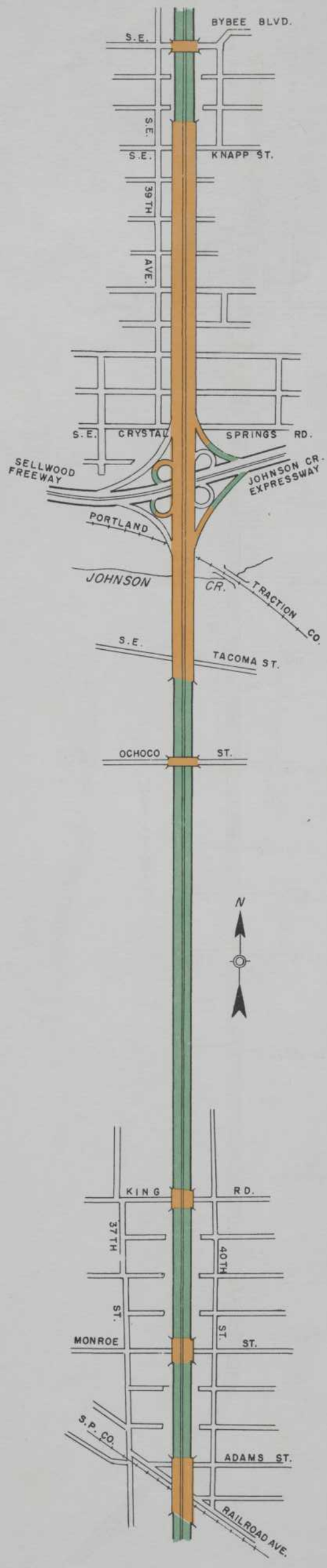


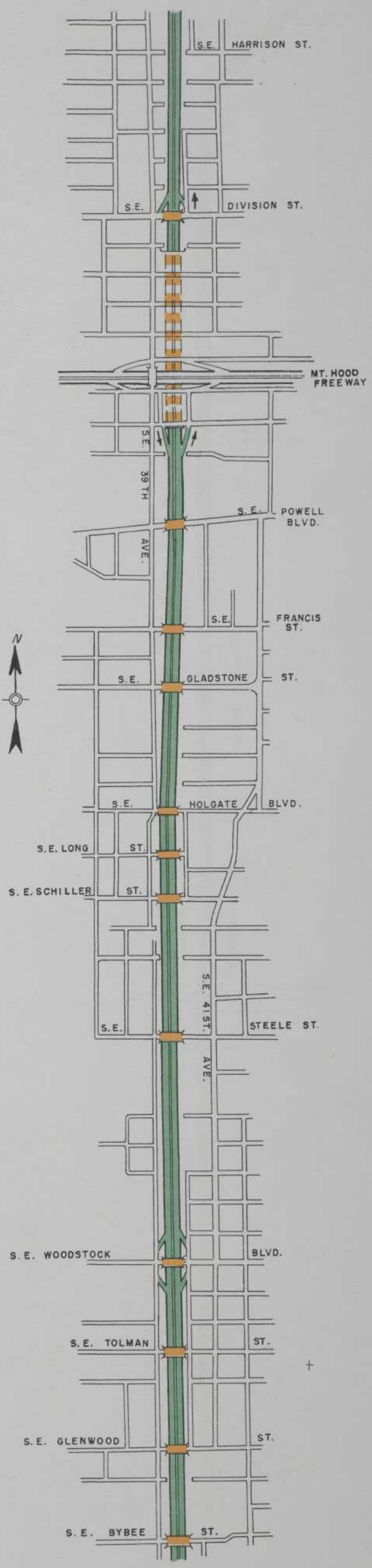


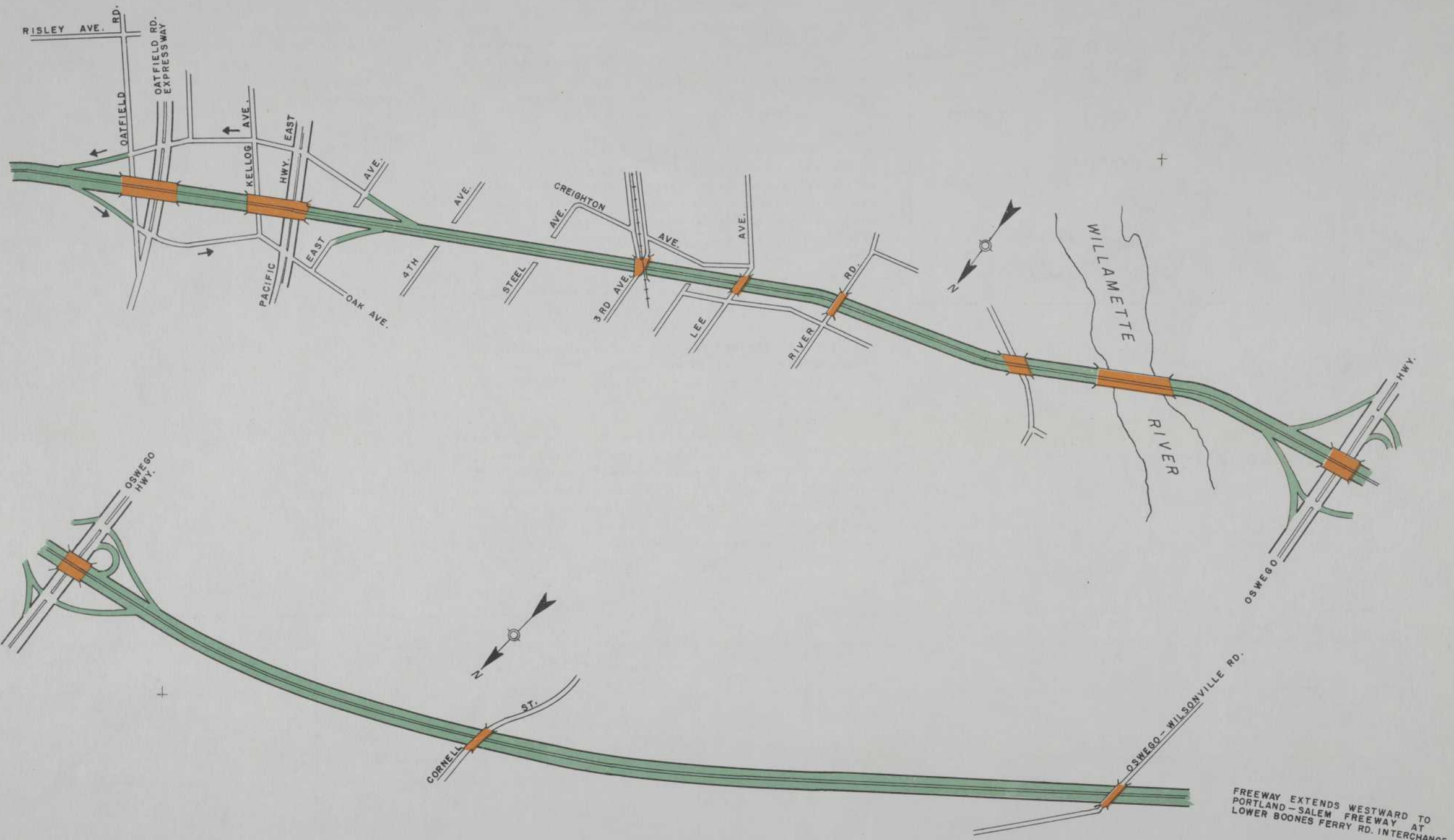
FIO - LAURELHURST FREEWAY

F 10 - LAURELHURST FREEWAY

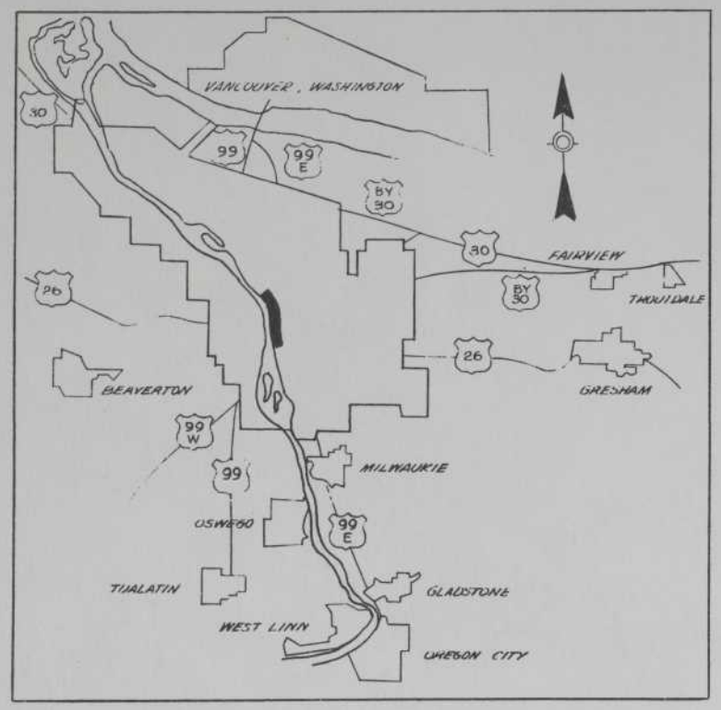








F10 - LAURELHURST FREEWAY



F11 - EAST BANK FREEWAY
HARBOR DRIVE FREEWAY - MT. HOOD FREEWAY

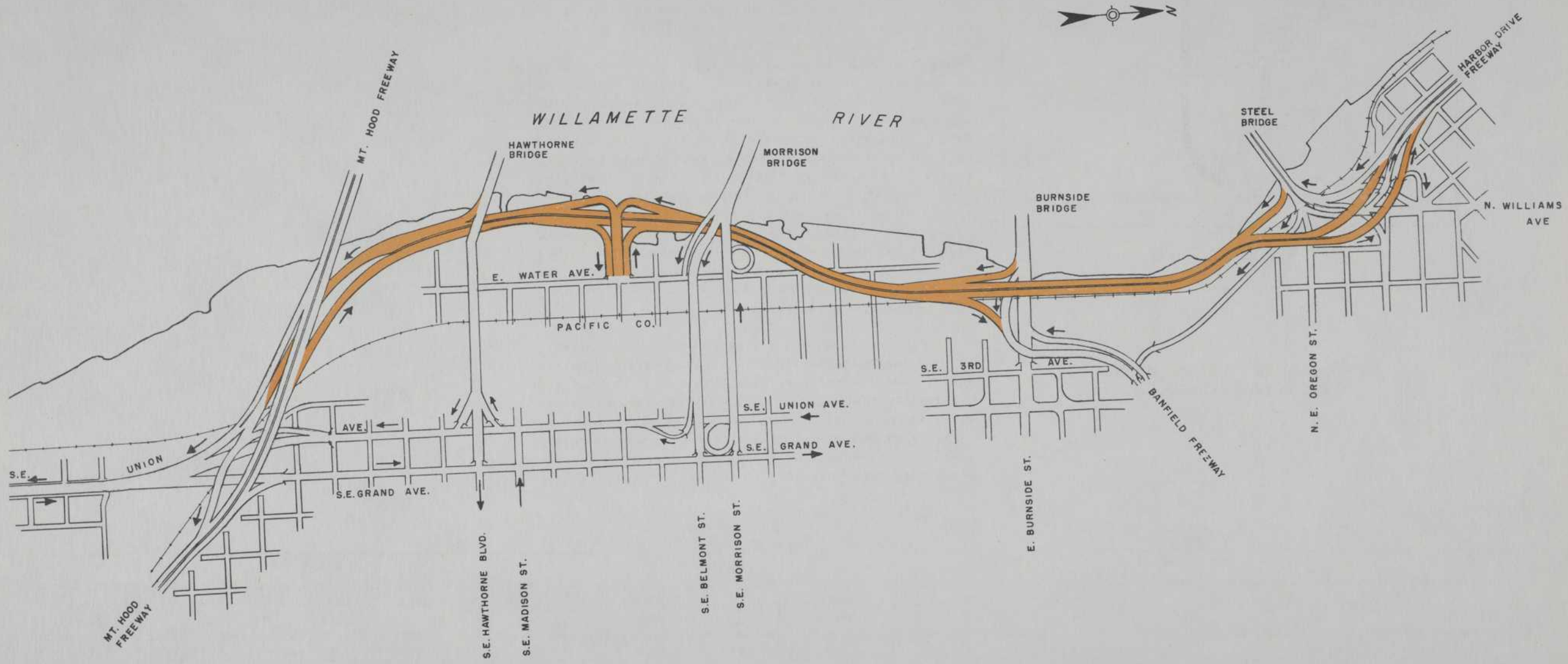
THE EAST BANK FREEWAY IS ALONG THE APPROXIMATE LOCATION OF THE EAST HARBOR LINE OF THE WILLAMETTE RIVER INTERCEPTING FOUR OF THE EXISTING WILLAMETTE RIVER BRIDGES AND ONE PROPOSED WILLAMETTE RIVER BRIDGE. THE SERVICE OF THIS FREEWAY COMPLEMENTS THE HARBOR DRIVE FREEWAY ON THE WEST SIDE. SUCH A ROUTING WOULD GIVE GREATER UTILIZATION OF THE MT. HOOD FREEWAY EAST OF UNION AVENUE, AND THE DELAWARE AND HARBOR DRIVE FREEWAYS NORTH OF THE STEEL BRIDGE, THUS, TENDING TO RELIEVE EXISTING AND ANTICIPATED TRAFFIC LOADS ON THE UNION-GRAND AVENUE ONE-WAY COUPLET.

TRAFFIC VOLUMES ON THIS FREEWAY ARE EXPECTED TO AVERAGE SOME 25,000 VEHICLES PER DAY BY 1975. THE ENTIRE SECTION WOULD BE BUILT TO FOUR-LANE STANDARDS AND WOULD SERVICE AN APPRECIABLE VOLUME OF INDUSTRIAL AND COMMERCIAL TRAFFIC WITH A LESSER VOLUME OF HOME-TO-WORK TRIPS AND A NOMINAL AMOUNT OF INTER-CITY AND LOCAL TRAFFIC.

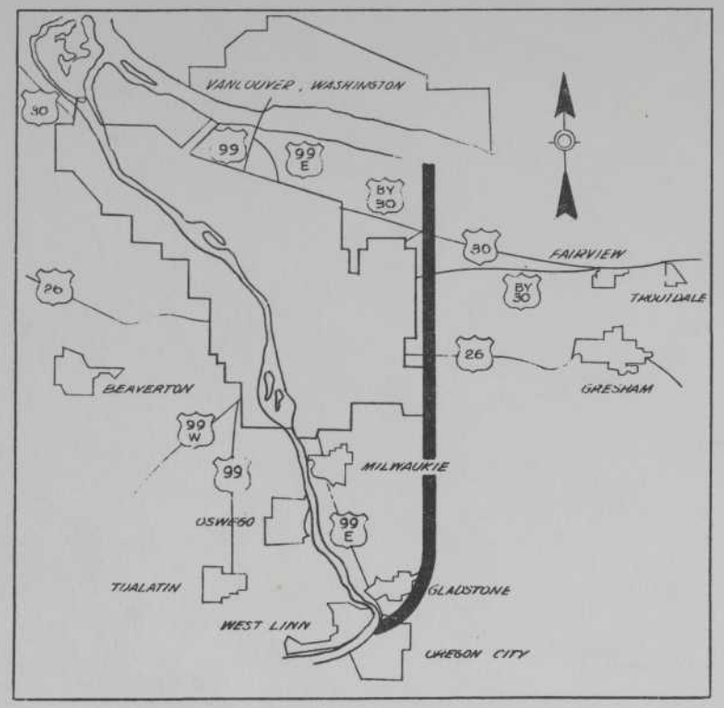
THROUGHOUT MOST OF ITS LOCATION THE FREEWAY WOULD BE ON AN ELEVATED SECTION AND, EVEN ON THOSE PARTS WHERE IT IS NOT NECESSARY TO CONSTRUCT IT SO, IT HAS BEEN SO DESIGNED FOR THE PURPOSES OF DEVELOPING COST ESTIMATES AS IT IS NOT CERTAIN WHAT FOUNDATION PROBLEMS WOULD BE ENCOUNTERED BETWEEN THE MORRISON AND HAWTHORNE BRIDGES.

THE OVERCROSSING OF THE BURNSIDE BRIDGE HAS BEEN OCCASIONED BECAUSE IT IS IMPOSSIBLE TO DEVELOP ADEQUATE VERTICAL CLEARANCE BETWEEN THE EXISTING RAILROAD YARDS AND THE PROPOSED EAST BANK FREEWAY AND THE BURNSIDE BRIDGE. IF BY THE TIME THIS FREEWAY IS CONSTRUCTED ANY ARRANGEMENTS CAN BE MADE WITH THE OPERATING RAILROAD COMPANIES FOR THE ABANDONMENT OF CERTAIN OF THEIR FACILITIES ADJACENT TO THE RIVER OR FOR THE SHIFTING IN LOCATION OF CERTAIN TERMINAL FACILITIES NORTH OF THE MORRISON STREET BRIDGE, IT WOULD THEN BE DESIRABLE TO GO UNDER THE BURNSIDE BRIDGE. IT IS POSSIBLE THAT THIS LOCATION MIGHT BE BROUGHT OUT TO THE HARBOR LINE RESULTING IN A COMBINED PROJECT WITH THE ARMY ENGINEERS IN THE DEVELOPMENT OF A SEA WALL. HOWEVER, THE LOCATION, AS CONSIDERED IN THIS REPORT, DOES NOT ACCOUNT FOR COMBINED PARTICIPATION IN THE FREEWAY AND SEA WALL PROJECTS.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
HARBOR DRIVE FREEWAY	MT. HOOD FREEWAY	1.86	25,000	4	- -	7,200,000	7,200,000	3,500,000	10,700,000
TOTAL		1.86			- -	7,200,000	7,200,000	3,500,000	10,700,000



F11- EAST BANK FREEWAY



F12 - CASCADE FREEWAY (ORE213)
MARINE DRIVE - OREGON CITY

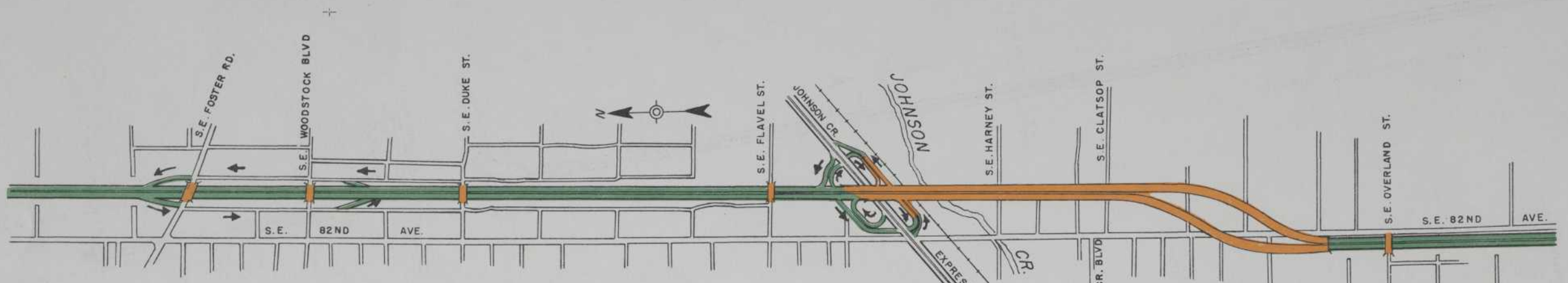
THE CASCADE FREEWAY SERVES A SECONDARY DESIRE LINE OF NORTH-SOUTH TRAVEL IN THE EXTREME EASTERLY PORTION OF PORTLAND. IT EXTENDS ON THE NORTH FROM MARINE DRIVE SOUTHERLY, PARALLELING 82ND AVENUE THROUGH GLADSTONE, TO AN INTERCHANGE CONNECTION WITH THE PRESENT PACIFIC HIGHWAY EAST, US99E, (WATER STREET) IN OREGON CITY.

THIS HIGHWAY IS EXPECTED BY 1975 TO HAVE TRAFFIC VOLUMES RANGING FROM A MINIMUM OF 5,000 VEHICLES PER DAY IN THE MARINE DRIVE-COLUMBIA BOULEVARD SECTION TO A MAXIMUM OF 40,000 VEHICLES PER DAY IN THE SECTION BETWEEN E. BURNSIDE STREET AND S.E. POWELL BOULEVARD. TRAFFIC THAT WOULD USE THIS FREEWAY IS MADE UP OF SEVERAL DIFFERENT COMPONANTS; NAMELY, THERE WOULD BE A CONSIDERABLE VOLUME OF INTER-CITY AND INTRA-STATE TRIPS USING SUCH FREEWAY TO BYPASS THE CENTRAL AREA OF PORTLAND AS WELL AS A LARGE VOLUME OF LOCAL TRAFFIC. IT WOULD ALSO SERVE AS A DIRECT CONNECTING LINK TO THE PORTLAND INTERNATIONAL AIRPORT FROM GLADSTONE, OREGON CITY, AND MID-WILLAMETTE VALLEY AREAS. IT IS ALSO DESIGNED AND SO LOCATED THAT IF DEMAND DEVELOPS, ANOTHER CROSSING OF THE COLUMBIA RIVER COULD BE INTEGRATED INTO THIS FREEWAY; HOWEVER, IT IS NOT FELT THAT DURING THE TIME PERIOD OF THIS STUDY THAT SUCH CROSSING WOULD BE NECESSARY.

THROUGHOUT THE ENTIRE LENGTH OF THIS FREEWAY, IT IS PLANNED TO CONSTRUCT ONLY FOUR LANES OF TRAFFIC BUT TO PLAN RIGHT OF WAY AND OTHER FACILITIES SO THAT THE CENTRAL PORTIONS OF THE FREEWAY BETWEEN THE COLUMBIA EXPRESSWAY AND JOHNSON CREEK EXPRESSWAY COULD BE EXPANDED TO CARE FOR ADDITIONAL TRAFFIC LANES AS DEMAND ARISES. GENERALLY, THE FREEWAY IS DEPRESSED; HOWEVER WHERE TOPOGRAPHY DICTATES IN THE VICINITY OF THE FREMONT AND BANFIELD FREEWAYS IT IS NECESSARY TO DEVELOP A TUNNEL SECTION SO AS TO MAINTAIN AN OPTIMUM GRADE LINE. THERE IS ONE SECTION THAT IS ON VIADUCT IN THE VICINITY OF THE JOHNSON CREEK EXPRESSWAY, WHILE SOUTH THEREOF THE FREEWAY IS DEPRESSED OR AT GRADE. ACCESS IS AS SHOWN ON THE OPPOSITE PAGE.

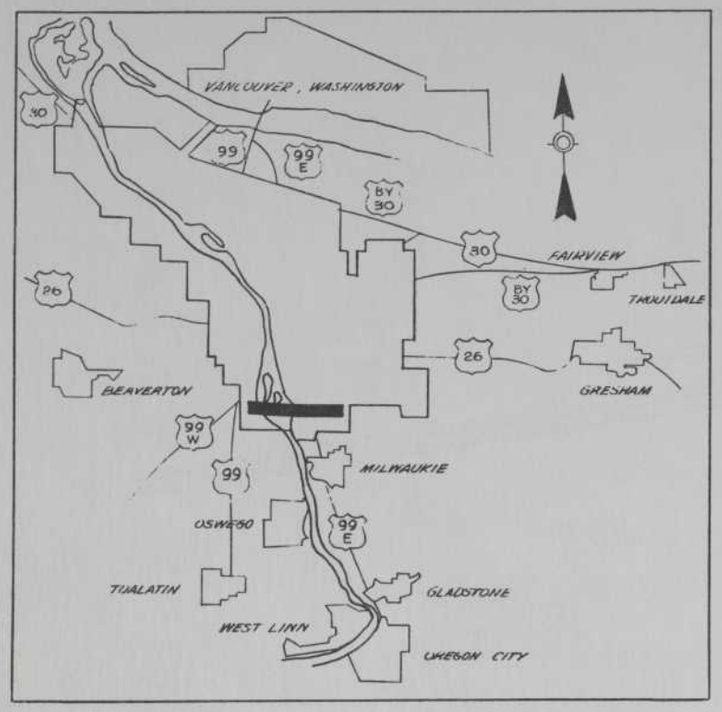
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
N.E. MARINE DRIVE	COLUMBIA EXPRESSWAY	1.83	5,000	4	560,000	420,000	980,000	80,000	1,060,000
COLUMBIA EXPRESSWAY	N.E. STANTON STREET	1.60	20,000	4	1,020,000	3,600,000	4,620,000	1,100,000	5,720,000
N.E. STANTON STREET	N.E. HASSALO STREET	0.79	25,000	4	510,000	1,200,000	1,710,000	850,000	2,560,000
N.E. HASSALO STREET	E. BURNSIDE STREET	0.51	35,000	4	340,000	230,000	570,000	830,000	1,400,000
E. BURNSIDE STREET	MT. HOOD FREEWAY	1.75	40,000	4	1,320,000	310,000	1,630,000	1,980,000	3,610,000
MT. HOOD FREEWAY	S.E. FOSTER ROAD	1.01	35,000	4	760,000	150,000	910,000	1,260,000	2,170,000
S.E. FOSTER ROAD	JOHNSON CREEK EXPRESSWAY	1.10	30,000	4	800,000	230,000	1,030,000	370,000	1,400,000
JOHNSON CREEK EXPRESSWAY	KING ROAD	1.38	20,000	4	720,000	300,000	1,020,000	1,020,000	2,040,000
KING ROAD	CLACKAMAS HIGHWAY	2.76	15,000	4	1,100,000	440,000	1,540,000	740,000	2,280,000
CLACKAMAS HIGHWAY	WATER STREET EXPRESSWAY	3.49	16,000	4	920,000	660,000	1,580,000	370,000	1,950,000
TOTAL		16.22			8,050,000	7,540,000	15,590,000	8,600,000	24,190,000

F12-CASCADE FREEWAY (ORE 213)



F12 - CASCADE FREEWAY (ORE 213)

F12 - CASCADE FREEWAY (ORE 213)



F13 - SELLWOOD FREEWAY
PORTLAND-SALEM FREEWAY - LAURELHURST FREEWAY

THE SELLWOOD FREEWAY CONNECTS SOUTHWEST PORTLAND WITH SOUTHEAST PORTLAND ALONG A LINE APPROXIMATING THE LOCATION OF THE PRESENT SELLWOOD BRIDGE AND TACOMA STREET. THIS ROUTING CARES FOR A CIRCUMFERENTIAL TIE IN THE FREEWAY SYSTEM SOUTH OF THE CENTRAL BUSINESS AREA AND WHEN COUPLED WITH THE MULTNOMAH EXPRESSWAY AND THE JOHNSON CREEK EXPRESSWAY GIVES A CONTINUOUS CROSS-TOWN ROUTE SOUTH OF THE CENTRAL PORTION OF THE CITY.

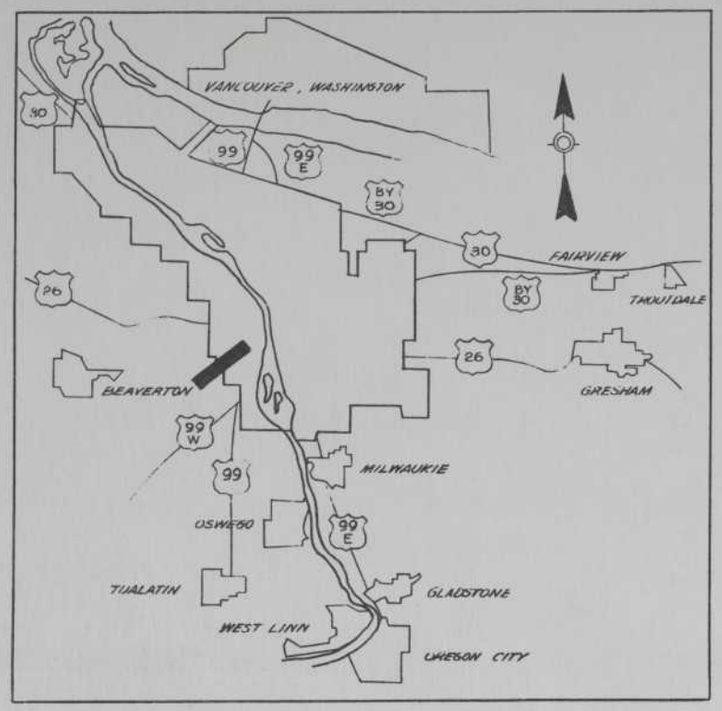
TRAFFIC VOLUMES BY 1975 ON THIS FREEWAY VARY FROM 30,000 IN THE CENTRAL PORTION BETWEEN S.E. 13TH AVENUE AND MCLOUGHLIN BOULEVARD TO 15,000 VEHICLES PER DAY IN THE EXTREME WESTERLY PORTION. TRAFFIC THAT WOULD USE THIS FREEWAY IS PRIMARILY NEIGHBORHOOD COUPLED WITH HOME-TO-WORK AND A MINIMUM AMOUNT OF INDUSTRIAL. IT ALSO SERVES AS A LINK IN A CIRCUMFERENTIAL ROUTE THROUGH THE SOUTH CENTRAL RESIDENTIAL AREAS OF PORTLAND.

THROUGHOUT MOST OF ITS LENGTH THE FREEWAY IS DEPRESSED OTHER THAN AT THE RIVERVIEW CEMETARY WHERE THE FREEWAY IS IN A TUNNEL SECTION, AND IT IS ON A MODIFIED HIGH-LEVEL WILLAMETTE RIVER CROSSING JUST NORTH OF THE PRESENT SELLWOOD BRIDGE.

CONNECTIONS ARE MADE BETWEEN THIS FREEWAY AND THE PORTLAND-SALEM FREEWAY, S.W. TAYLOR'S FERRY ROAD, OSWEGO HIGHWAY IN THE VICINITY OF S.E. NINTH AND SIXTH AVENUES, S.E. MCLOUGHLIN BOULEVARD AND WITH THE LAURELHURST FREEWAY AT THE JOHNSON CREEK EXPRESSWAY. THE FREEWAY WILL BE FOUR LANES THROUGHOUT WITH SUFFICIENT RIGHT OF WAY ACQUIRED AT THE OUTSET TO CARE FOR ULTIMATE DEVELOPMENT TO SIX LANES.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
PORTLAND-SALEM FREEWAY	OSWEGO HIGHWAY	1.21	15,000	4	2,340,000	260,000	2,600,000	200,000	2,800,000
OSWEGO HIGHWAY	S.E. SIXTH AVENUE	0.45	30,000	4	60,000	2,660,000	2,720,000	80,000	2,800,000
S.E. SIXTH AVENUE	MCLOUGHLIN EXPRESSWAY	0.98	30,000	4	740,000	830,000	1,570,000	740,000	2,310,000
MCLOUGHLIN EXPRESSWAY	LAURELHURST FREEWAY	1.00	24,000	4	490,000	470,000	960,000	360,000	1,320,000
TOTAL		3.64			3,630,000	4,220,000	7,850,000	1,380,000	9,230,000

F13 - SELLWOOD FREEWAY

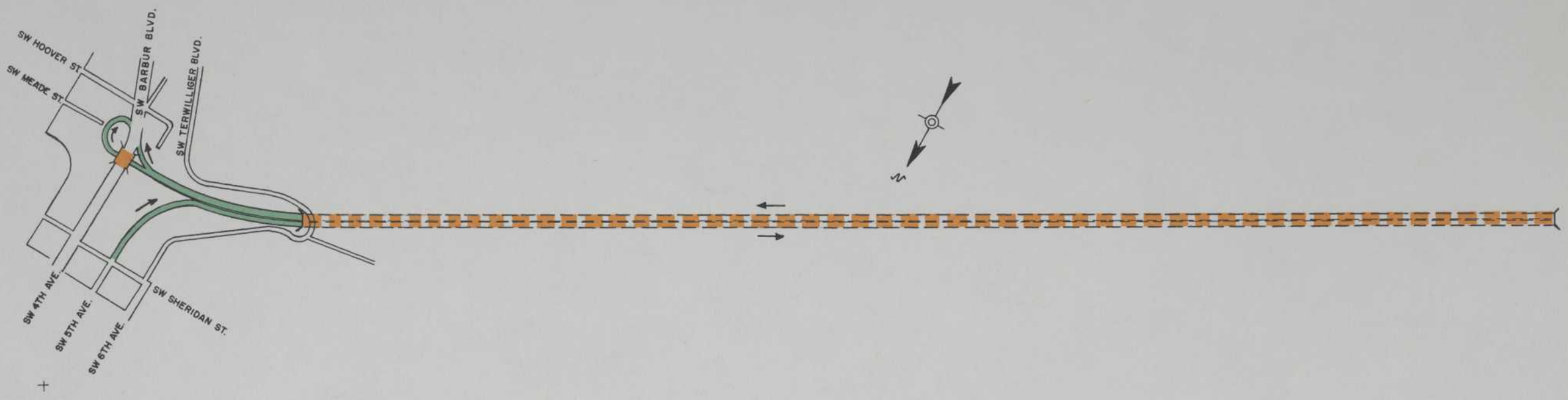


THE GLENCULLEN FREEWAY CONNECTS THE RAPIDLY GROWING RESIDENTIAL AREA SOUTHWEST OF PORTLAND DIRECTLY WITH A ONE-WAY STREET COUPLET CONNECTING TO THE WEST SIDE CENTRAL BUSINESS DISTRICT AND BY OTHER ARTERIAL STREETS TO THE ROSS ISLAND BRIDGE AND HARBOR DRIVE FREEWAY. THIS FREEWAY STARTS AT AN INTERSECTION WITH BARBUR BOULEVARD AND ENTERS A TWIN TWO-LANE TUNNEL AT TERWILLIGER BOULEVARD AND REMAINS IN TUNNEL SECTION UNDER MARQUAM HILL AND COUNCIL CREST AND LEAVES THE TUNNEL SECTION ONE HALF MILE NORTHEAST OF GLENCULLEN. IT UNDERCROSSES S.W. 45TH AVENUE AND CONNECTS DIRECTLY WITH THE BEAVERTON-HILLSDALE HIGHWAY THROUGH A TRAFFIC INTERCHANGE IN THE COMMUNITY OF GLENCULLEN.

THIS FREEWAY IS EXPECTED TO CARRY SOME 15,000 VEHICLES PER DAY AND IS VITAL IN DEVELOPING RELIEF FOR THE SUNSET AND PORTLAND-SALEM FREEWAYS WHICH WILL ULTIMATELY BECOME CONGESTED THROUGH TRAFFIC DEMAND.

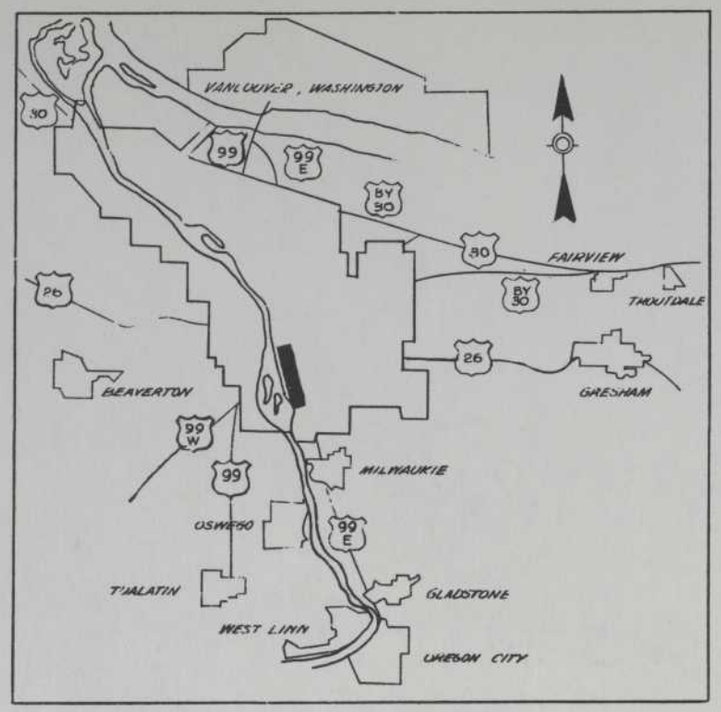
F14 - GLENCULLEN FREEWAY
BARBUR BOULEVARD - BEAVERTON-HILLSDALE HIGHWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
BARBUR BOULEVARD	GLENCULLEN	2.54	15,000	4	400,000	18,100,000	18,500,000	500,000	19,000,000
TOTAL		2.54			400,000	18,100,000	18,500,000	500,000	19,000,000



F14 - GLENCULLEN FREEWAY

EXPRESSWAYS



THIS PROJECT IS NECESSARY TO INCREASE THE TRAFFIC CAPACITY ON AN EXISTING ALREADY OVER-TAXED FACILITY AND WILL BE ACCOMPLISHED THROUGH THE CONSTRUCTION OF A RAISED MEDIAN THROUGHOUT ITS ENTIRE LENGTH, THE PROHIBITION OF PARKING, THE INSTALLATION OF TRAFFIC SIGNALS, AND THE CHANNELIZATION OF A FEW MAJOR INTERSECTIONS AND CLOSING TO CROSS-TRAFFIC ALL MINOR INTERSECTIONS BETWEEN THE UNION-GRAND AVENUE ONE-WAY COUPLET TERMINUS IN THE VICINITY OF S.E. DIVISION STREET AND THE TERMINATION OF THE PRESENT RAISED MEDIAN AT S.E. REEDWAY STREET.

FOUR LANES OF TRAFFIC WILL BE MAINTAINED AS ARE PRESENTLY IN EXISTENCE AND IT IS EXPECTED THAT, NOTWITHSTANDING ALL OTHER IMPROVEMENTS IN THE AREA SUCH AS THE EASTSIDE EXPRESSWAY, THE LAURELHURST FREEWAY AND OTHER MAJOR ROUTINGS, HOME-TO-WORK INTRA- AND INTER-CITY TRAFFIC WILL STILL AMOUNT TO SOME 25,000 VEHICLES PER DAY IN 1975. PENDING COMPLETION OF THESE EXPRESSWAY AND FREEWAY ROUTES, MCLOUGHLIN BOULEVARD WILL CARRY AN EVEN GREATER VOLUME OF TRAFFIC.

E1 - MCLOUGHLIN BOULEVARD EXPRESSWAY (US99E)
STEPHENS-UNION-GRAND AVENUES - REEDWAY STREET

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
UNION-GRAND AVENUE COUPLET	REEDWAY STREET	2.25	25,000	4	250,000	- -	250,000	- -	250,000
TOTAL		2.25			250,000	- -	250,000	- -	250,000


MCLAUGHLIN BOULEVARD
EXPRESSWAY
N
VANCOUVER
COLUMBIA
RIVER
PORTLAND
WILLAMETTE
RIVER
FAIRVIEW
TROUTDALE
WOOD VILLAGE
SANDY
RIVER
GRESHAM
MULTNOMAH CO.
CLACKAMAS CO.
BEAVERTON
WASHINGTON
MULTNOMAH
CO.
CO.
MILWAUKIE
OSWEGO
Lake Oswego
GLADSTONE
CLACKAMAS
RIVER
TUALATIN
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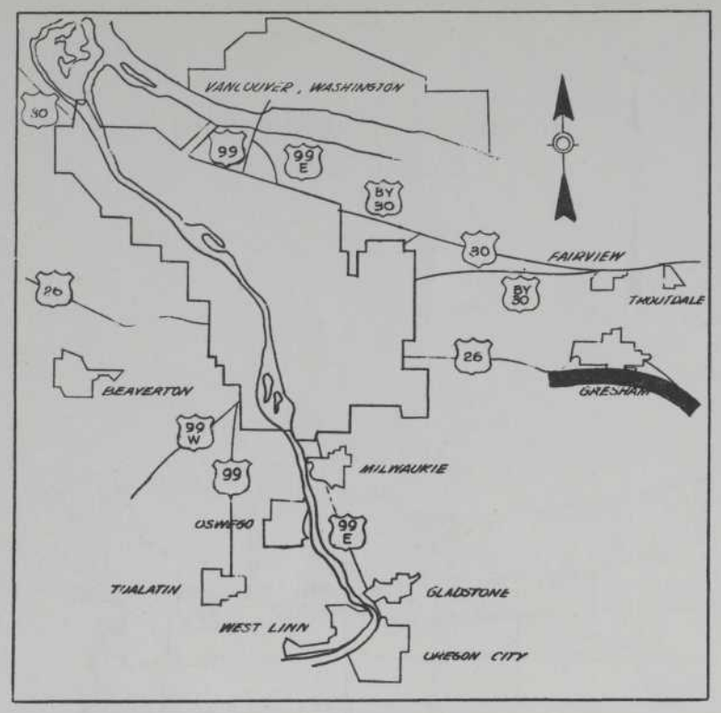
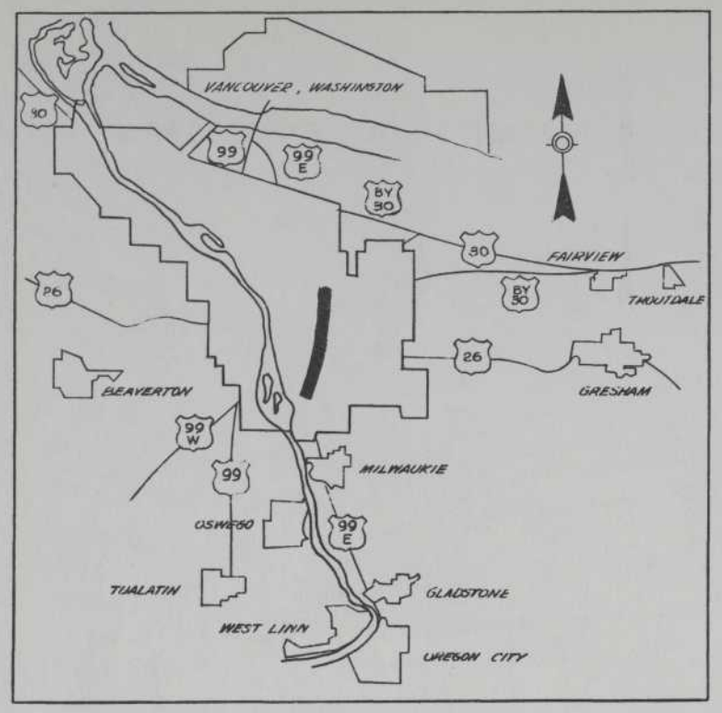


THIS EXPRESSWAY IS A CONTINUATION OF THE MT. HOOD FREEWAY, WHICH HAS BEEN PREVIOUSLY DESCRIBED, AND IS ON VIRGIN ALIGNMENT EXTENDING EASTERLY FROM LINNEMAN JUNCTION SOUTH OF GRESHAM PROPER AND THENCE SOUTHEASTERLY TO AN INTERSECTION WITH THE EXISTING MT. HOOD HIGHWAY, US26, JUST WEST OF THE CITY OF SANDY. THIS HIGHWAY IS PLANNED TO BE CONSTRUCTED TO FOUR LANES WITH THE TWO LANES PHYSICALLY SEPARATED AND WITH IMPORTANT INTERSECTIONS SEPARATED IN GRADE. IT IS FELT THAT ALTHOUGH THERE IS SOME 5,000 TO 8,000 VEHICLES PER DAY REQUIRING THE USAGE OF THIS EXPRESSWAY, IT WOULD NOT BE NECESSARY TO BUILD IT TO COMPLETE FREEWAY STANDARDS EVEN THOUGH ALL RIGHTS OF WAY WILL BE ACQUIRED WITH FULL CONTROL OF ACCESS.

E2 - MT. HOOD EXPRESSWAY (US26)
LINNEMAN JUNCTION - SANDY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
LINNEMAN JUNCTION	HOGAN ROAD	4.30	5,000	4	1,040,000	300,000	1,340,000	380,000	1,720,000
HOGAN ROAD	MT. HOOD HIGHWAY	7.70	8,000	4	1,825,000	150,000	1,975,000	250,000	2,225,000
TOTAL		12.00			2,865,000	450,000	3,315,000	630,000	3,945,000

MT. HOOD EXPRESSWAY



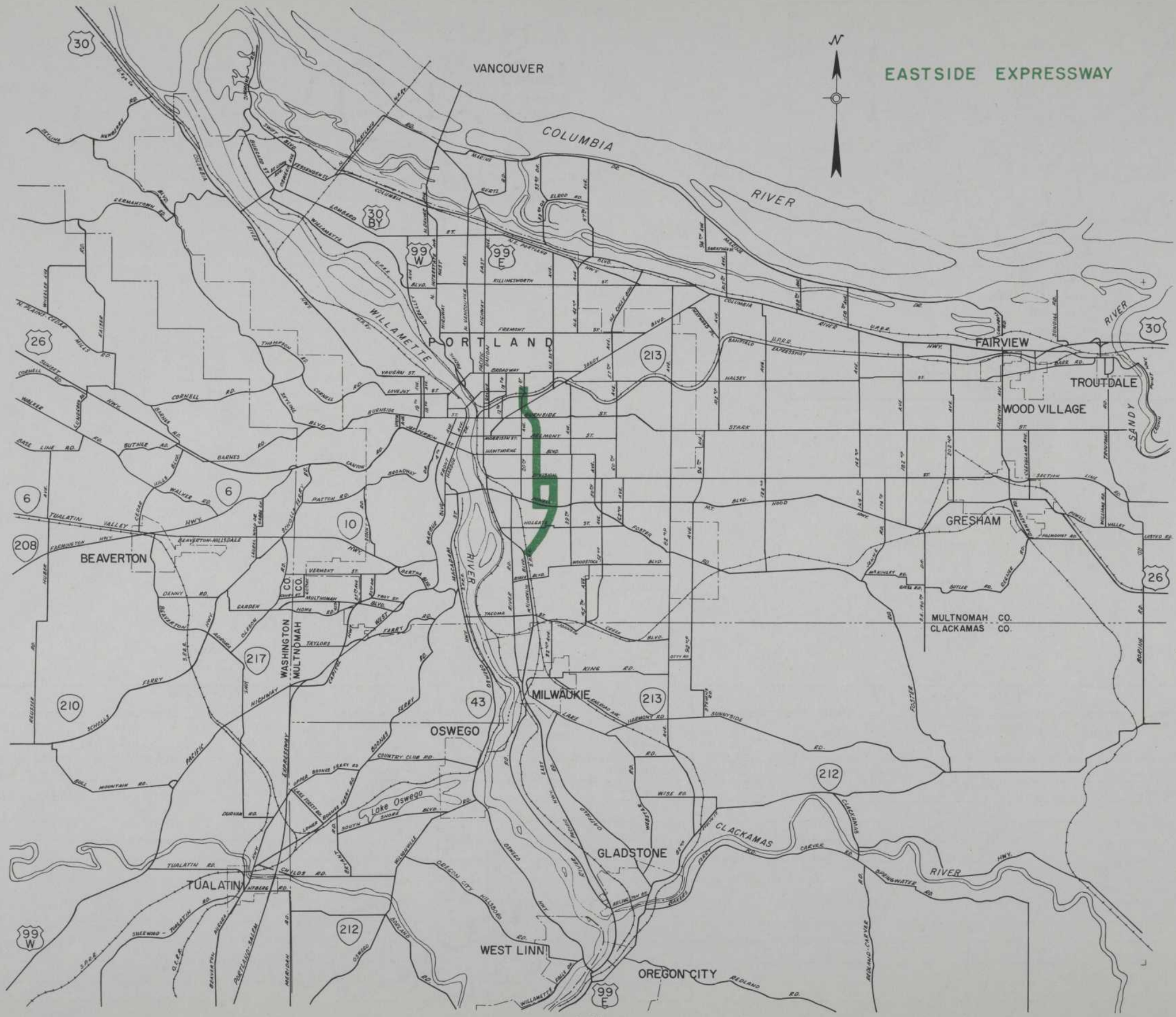
THIS IMPROVEMENT CONNECTS BETWEEN THE 15TH-16TH AVENUE ONE-WAY COUPLET JUST NORTH OF THE BANFIELD FREEWAY SOUTHERLY TO THE MCLOUGHLIN BOULEVARD EXPRESSWAY AT REEDWAY STREET. THROUGHOUT ITS ENTIRE LENGTH RIGHTS OF WAY HAVE BEEN ACQUIRED AND ACCESSES CONTROLLED. IT WOULD BE IMPRACTICABLE TO DEVELOP A FACILITY OF THE LEVEL REQUIRED ON EXISTING STREETS. TRAFFIC VOLUMES OF SOME 30,000 VEHICLES PER DAY NORTH OF THE MT. HOOD FREEWAY ARE EXPECTED ON THIS FACILITY BY 1975.

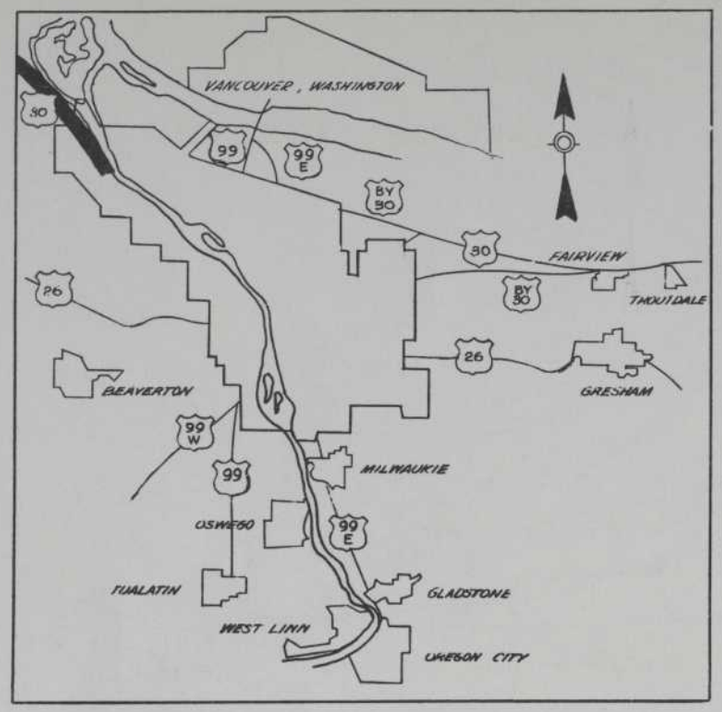
ACCESS TO THIS FACILITY WILL BE CONTROLLED THROUGHOUT ITS ENTIRE LENGTH BUT CONNECTIONS TO MOST MAJOR STREETS WILL BE MADE THROUGH A SEPARATION IN GRADE. SOME FOUR MAJOR INTERSECTIONS WOULD BE SIGNALIZED. MINOR INTERSECTIONS WILL BE CLOSED OR WILL HAVE THEIR CROSS-TRAFFIC MOVEMENTS RESTRICTED. THE SOUTHERLY PORTION OF THE EXPRESSWAY BETWEEN POWELL BOULEVARD AND MCLOUGHLIN EXPRESSWAY IS ON ELEVATED SECTION JUST SOUTH OF THE SOUTHERN PACIFIC COMPANY BROOKLYN YARD.

E3 - EASTSIDE EXPRESSWAY
MULTNOMAH STREET - MCLOUGHLIN EXPRESSWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
N.E. MULTNOMAH STREET	MT. HOOD FREEWAY	2.10	30,000	4	525,000	735,000	1,260,000	3,360,000	4,620,000
MT. HOOD FREEWAY	MCLOUGHLIN EXPRESSWAY	1.80	15,000	4	450,000	950,000	1,400,000	1,530,000	2,930,000
TOTAL		3.90			975,000	1,685,000	2,660,000	4,890,000	7,550,000

EASTSIDE EXPRESSWAY



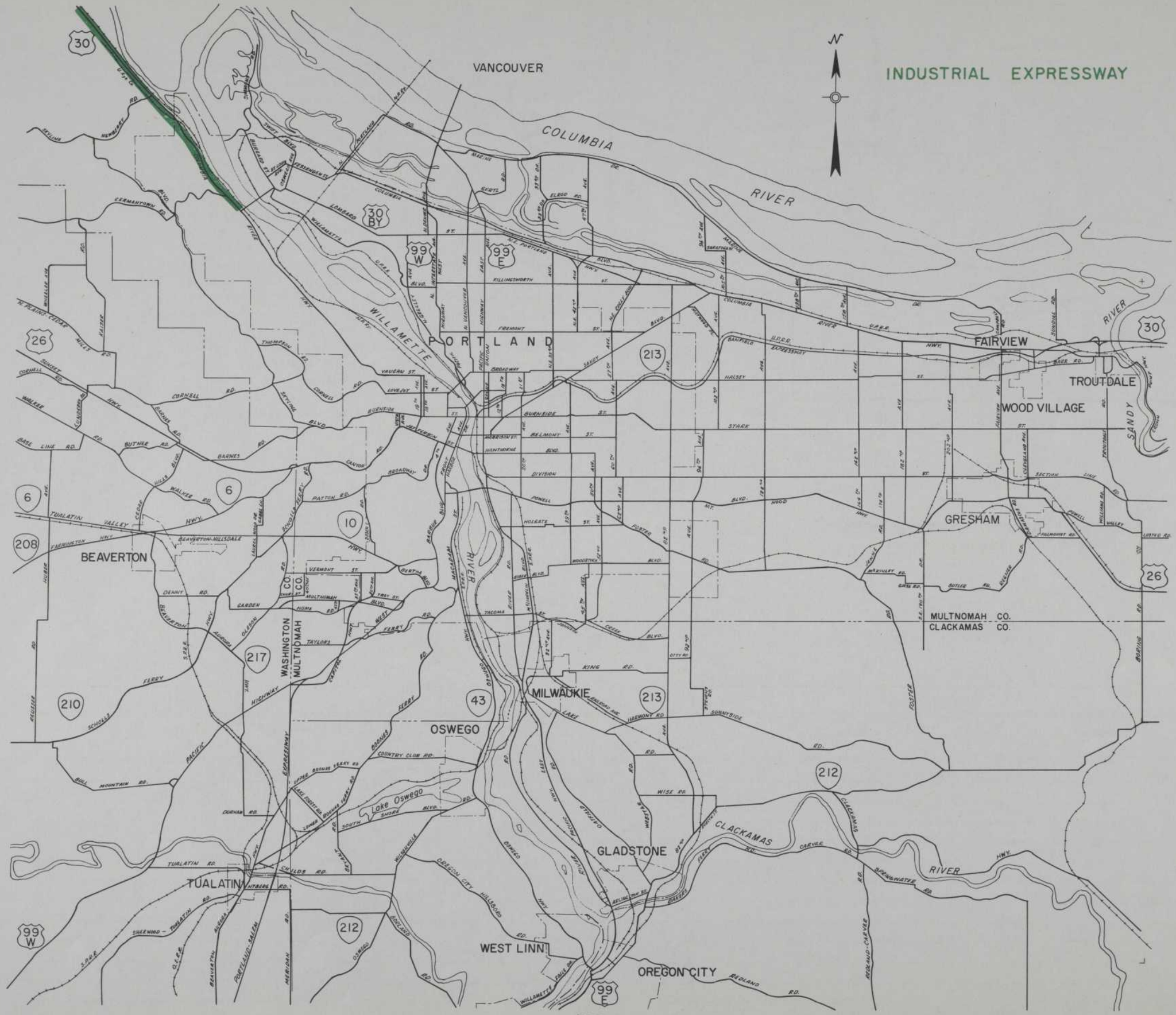


THE INDUSTRIAL EXPRESSWAY IS DESIGNED TO CARE FOR RECONSTRUCTION OF THE COLUMBIA RIVER HIGHWAY, US30, THROUGH THE COMMUNITY OF LINNTON AND MAKE DIRECT CONNECTION TO THE ST. JOHNS BRIDGE, THE INDUSTRIAL FREEWAY, AND TUALATIN VALLEY-ST. JOHNS EXPRESSWAY.

IT IS EXPECTED THAT BY 1975 THIS EXPRESSWAY, EVEN THOUGH BYPASSING THE LINNTON COMMUNITY ON THE RIVER SIDE, WILL STILL BE USED BY SOME 15,000 VEHICLES PER DAY.

E4 - INDUSTRIAL EXPRESSWAY (US30)
BURLINGTON - ST. JOHNS BRIDGE

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
BURLINGTON	ST. JOHNS BRIDGE	4.25	15,000	4	900,000	225,000	1,125,000	1,675,000	2,800,000
TOTAL		4.25			900,000	225,000	1,125,000	1,675,000	2,800,000


INDUSTRIAL EXPRESSWAY
N
VANCOUVER
COLUMBIA
RIVER
PORTLAND
WILLAMETTE
RIVER
FAIRVIEW
TROUTDALE
WOOD VILLAGE
SANDY
RIVER
GRESHAM
MULTNOMAH CO.
CLACKAMAS CO.
BEAVERTON
WASHINGTON
MULTNOMAH
CO.
CO.
MILWAUKIE
OSWEGO
Lake Oswego
GLADSTONE
CLACKAMAS
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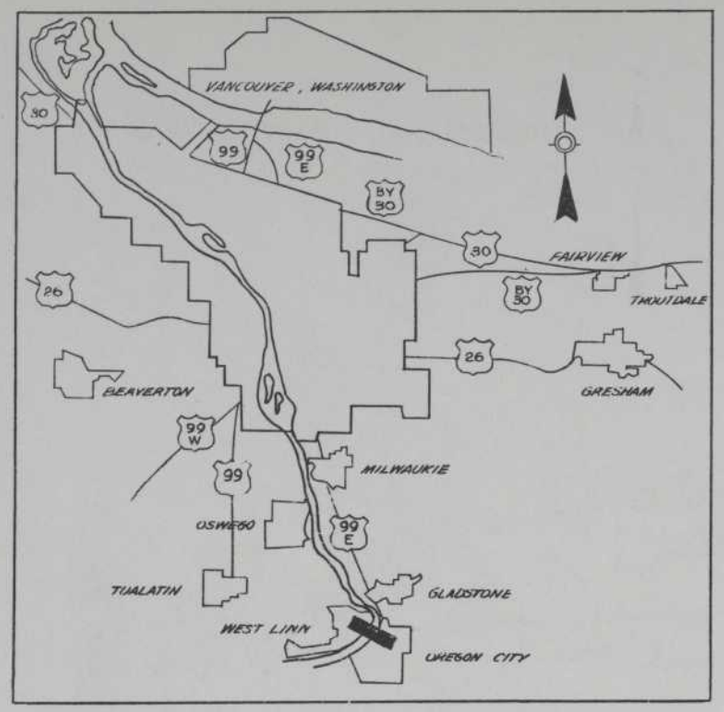

THE OREGON CITY HIGH-LEVEL BRIDGE IS PLANNED TO CONNECT THE OSWEGO HIGHWAY IN WEST LINN WITH THE UPPER LEVEL OF OREGON CITY IN THE VICINITY OF THE MCLOUGHLIN HOUSE AT SEVENTH AVENUE. SUCH BRIDGE WOULD BE CONSTRUCTED TO FOUR LANES WITH A RAISED MEDIAN AND WOULD HAVE ADEQUATE CHANNELIZED INTERSECTIONS WITH SIGNALIZED CONTROL PROVIDED AT ITS TERMINAL POINTS.

IT IS EXPECTED THAT BY 1975 SOME 19,000 VEHICLES PER DAY WILL DESIRE TO CROSS THE WILLAMETTE RIVER BETWEEN WEST LINN AND OREGON CITY AND THAT THE NEW STRUCTURE WILL CARE FOR SOME 10,000 VEHICLES PER DAY AND THE EXISTING STRUCTURE CONNECTING WEST LINN WITH THE LOWER LEVEL OF OREGON CITY AND ITS CENTRAL BUSINESS DISTRICT WOULD CARE FOR THE REMAINING 9,000 VEHICLES PER DAY. SUCH STRUCTURE WOULD REMOVE FROM THE CONGESTED CENTRAL BUSINESS DISTRICT OF OREGON CITY THOSE INCREMENTS OF TRAFFIC WHICH HAVE NO DESIRE FOR INGRESS OR EGRESS TO SUCH CENTRAL BUSINESS DISTRICT. IT WOULD ALSO SERVE INTER-CITY AND EXCHANGE OF NEIGHBORHOOD TRAFFIC AND A CONSIDERABLE VOLUME OF HOME-TO-WORK TRIPS BETWEEN THE INDUSTRIAL AREAS OF WEST LINN AND OREGON CITY.

E5 - OREGON CITY BRIDGE EXPRESSWAY (ORE43)
WEST LINN - OREGON CITY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
WEST LINN	OREGON CITY	0.31	10,000	4	50,000	2,700,000	3,200,000	300,000	3,500,000
TOTAL		0.31			50,000	2,700,000	3,200,000	300,000	3,500,000


OREGON CITY BRIDGE
EXPRESSWAY
N
VANCOUVER
COLUMBIA
RIVER
PORTLAND
WILLAMETTE
RIVER
FAIRVIEW
TROUTDALE
WOOD VILLAGE
SANDY
RIVER
GRESHAM
MULTNOMAH CO.
CLACKAMAS CO.
BEAVERTON
WASHINGTON
MULTNOMAH
MILWAUKIE
OSWEGO
Lake Oswego
GLADSTONE
CLACKAMAS
RIVER
TUALATIN
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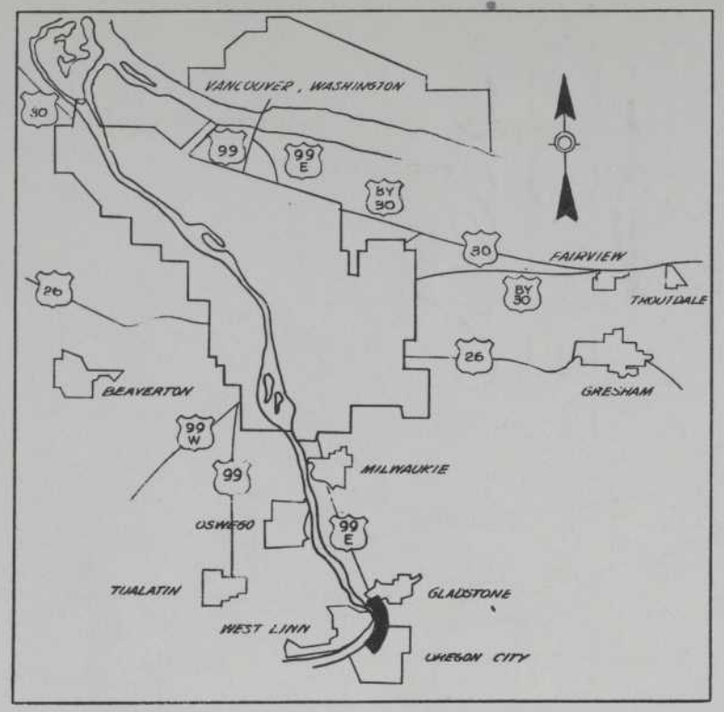


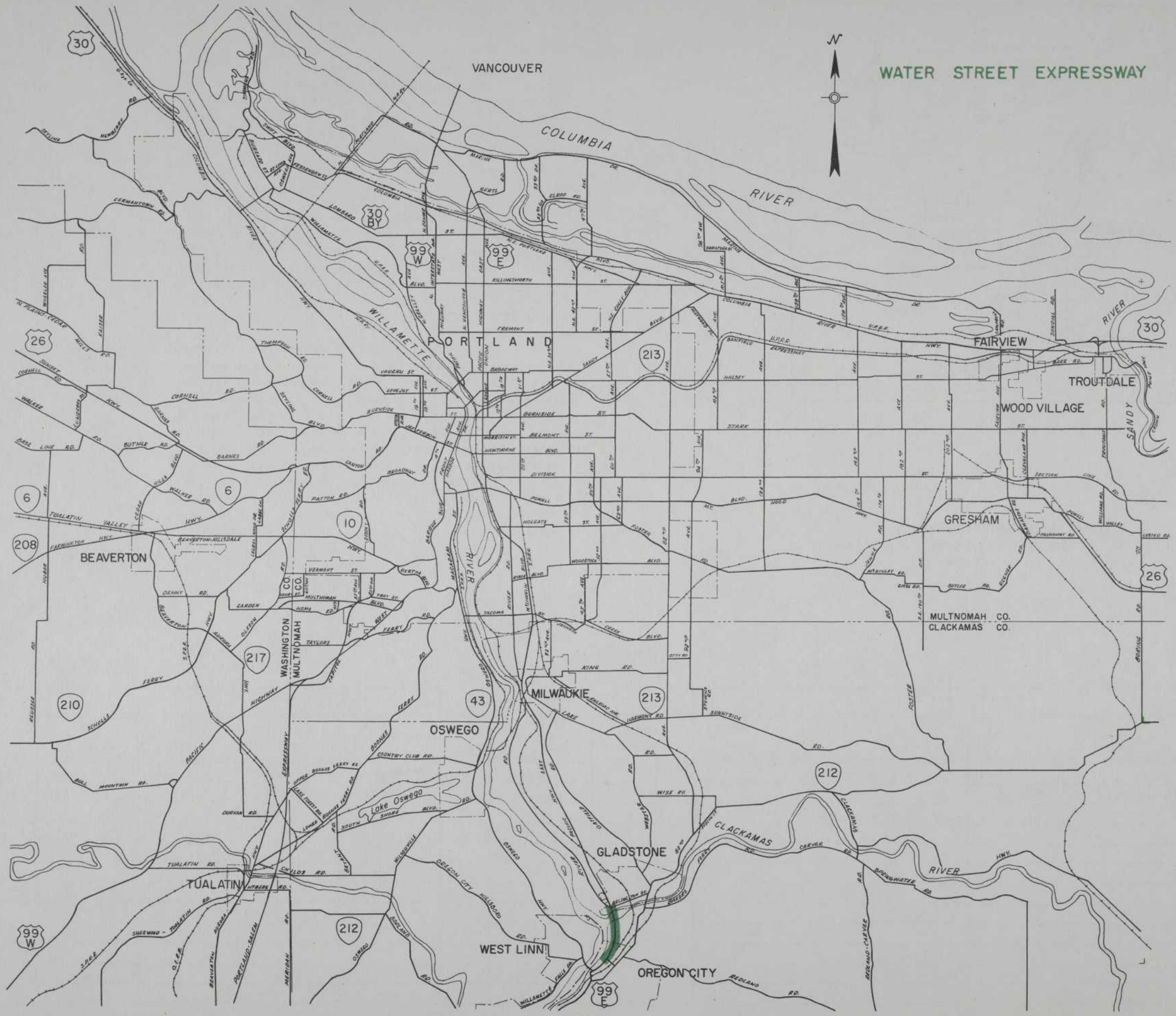
THIS PROJECT RUNS FROM JUST NORTH OF THE CLACKAMAS RIVER BRIDGE IN GLADSTONE TO THE INTERSECTION OF TENTH STREET IN OREGON CITY AND GENERALLY IS THE CONVERSION OF THE PACIFIC HIGHWAY EAST (MCLOUGHLIN BOULEVARD AND WATER STREET) FROM MAJOR STREET STATUS TO EXPRESSWAY STATUS. SUCH WOULD REQUIRE THE PARTIAL CONTROL OF ACCESS ALONG THIS ROUTE, THE CONSTRUCTION OF A RAISED MEDIAN, AND THE DEVELOPMENT OF LEFT-TURN REFUGES AT MAJOR INTERSECTIONS SUCH AS TENTH AND 14TH STREETS IN OREGON CITY AND AT ARLINGTON STREET IN GLADSTONE. IT ALSO CALLS FOR THE CONSTRUCTION OF A TRAFFIC INTERCHANGE BETWEEN THIS EXPRESSWAY AND THE BEGINNING OF THE CASCADE FREEWAY. IT ALSO REQUIRES CONSTRUCTION OF CONNECTIONS TO THE OREGON CITY SEWAGE DISPOSAL PLANT AND RECREATIONAL AREAS ALONG THE RIVER SUCH THAT LEFT TURNS ARE ELIMINATED.

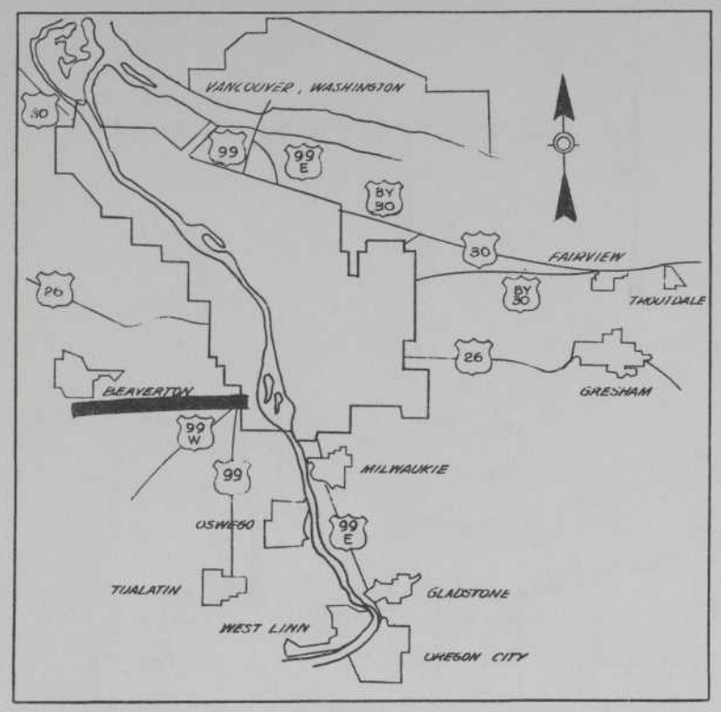
THE FOUR LANES OF TRAFFIC AS PRESENTLY BEING UTILIZED ALONG US99E WOULD BE MAINTAINED, IT WOULD IN SOME AREAS HAVE CURBS CONSTRUCTED, AND IT IS ANTICIPATED, NOTWITHSTANDING ALL OTHER IMPROVEMENTS IN THE AREA, THAT BY 1975 SOME 22,000 VEHICLES PER DAY WOULD USE THIS SECTION OF US99E.

E6 - WATER STREET EXPRESSWAY (OREGON CITY, US99E)
GLADSTONE - OREGON CITY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
GLADSTONE	TENTH STREET	1.20	22,000	4	200,000	- -	200,000	- -	200,000
TOTAL		1.20			200,000	- -	200,000	- -	200,000

WATER STREET EXPRESSWAY





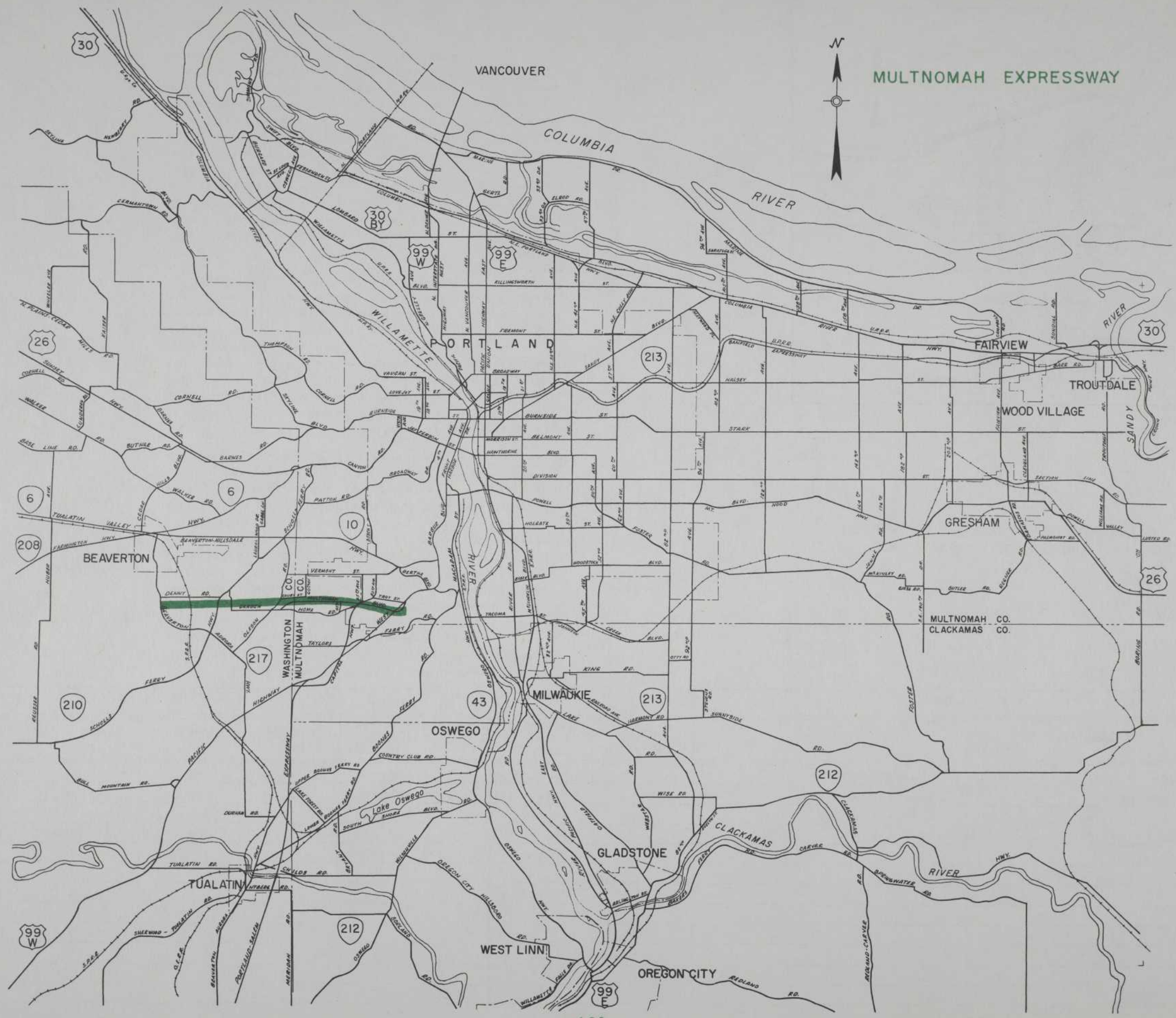
E7 - MULTNOMAH EXPRESSWAY
CEDAR HILLS-TUALATIN EXPRESSWAY - PORTLAND-SALEM FREEWAY

THE MULTNOMAH EXPRESSWAY IS AN EAST-WEST ROUTING CONNECTING AN OUTER CIRCUMFERENTIAL EXPRESSWAY (CEDAR HILLS-TUALATIN) WITH THE PORTLAND-SALEM FREEWAY AND IN ITS COURSE IS INTERSECTED BY THE SCHOLLS FERRY HIGHWAY AND OTHER MAJOR STREETS. IT BISECTS THE MULTNOMAH AREA AND WOULD SERVE AS A DISTRIBUTION AND FEEDER ROUTE TO BARBUR BOULEVARD AND PORTLAND-SALEM FREEWAY.

THIS, AS WOULD ALL OTHER EXPRESSWAYS, WOULD BE CONSTRUCTED TO FOUR LANES AND IT IS EXPECTED THAT IN ITS WESTERLY PORTIONS IN THE VICINITY OF THE EXISTING BEAVERTON-AURORA HIGHWAY WOULD CARE IN 1975 FOR SOME 10,000 VEHICLES PER DAY, WHICH VOLUME WOULD INCREASE TO APPROXIMATELY 18,000 VEHICLES PER DAY AS THE EXPRESSWAY INTERSECTS THE PORTLAND-SALEM FREEWAY.

THIS EXPRESSWAY IS A PART OF A CONTINUOUS EAST-WEST CIRCUMFERENTIAL ROUTING ON THE SOUTHERLY PORTION OF THE CITY OF PORTLAND AND, WHEN COUPLED WITH THE SELLWOOD FREEWAY AND JOHNSON CREEK EXPRESSWAY, IS AN EXCELLENT EAST-WEST ARTERIAL AND WILL DEVELOP A RATHER HIGH LEVEL OF SERVICE FOR AN INTERCHANGE OF TRAFFIC BETWEEN COMMUNITIES AND NEIGHBORHOODS. THROUGHOUT MOST OF ITS LENGTH, ALL MAJOR INTERSECTIONS WILL BE SEPARATED IN GRADE WITH INTERCHANGE POSSIBLE. OTHER LESS IMPORTANT INTERSECTIONS WILL BE CHANNELIZED BUT WILL NOT NECESSARILY BE SIGNALIZED UNTIL LATE IN THE 20-YEAR PERIOD OF PLANNING.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
CEDAR HILLS-TUALATIN EXPRESSWAY	SCHOLLS HIGHWAY	1.50	10,000	4	375,000	150,000	525,000	120,000	645,000
SCHOLLS HIGHWAY	OLESON ROAD	1.10	15,000	4	250,000	100,000	350,000	90,000	440,000
OLESON ROAD	PORTLAND-SALEM FREEWAY	2.70	18,000	4	450,000	75,000	525,000	210,000	735,000
TOTAL		5.30			1,075,000	325,000	1,400,000	420,000	1,820,000


MULTNOMAH EXPRESSWAY
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RIVER
FAIRVIEW
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SANDY
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GRESHAM
BEAVERTON
TUALATIN
WASHINGTON CO.
MULTNOMAH CO.
MULTNOMAH CO.
CLACKAMAS CO.
MILWAUKIE
OSWEGO
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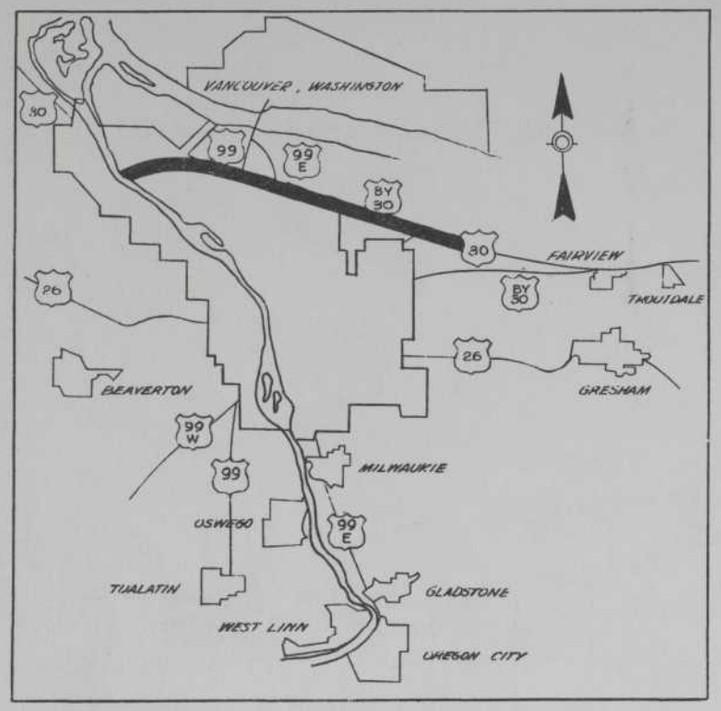


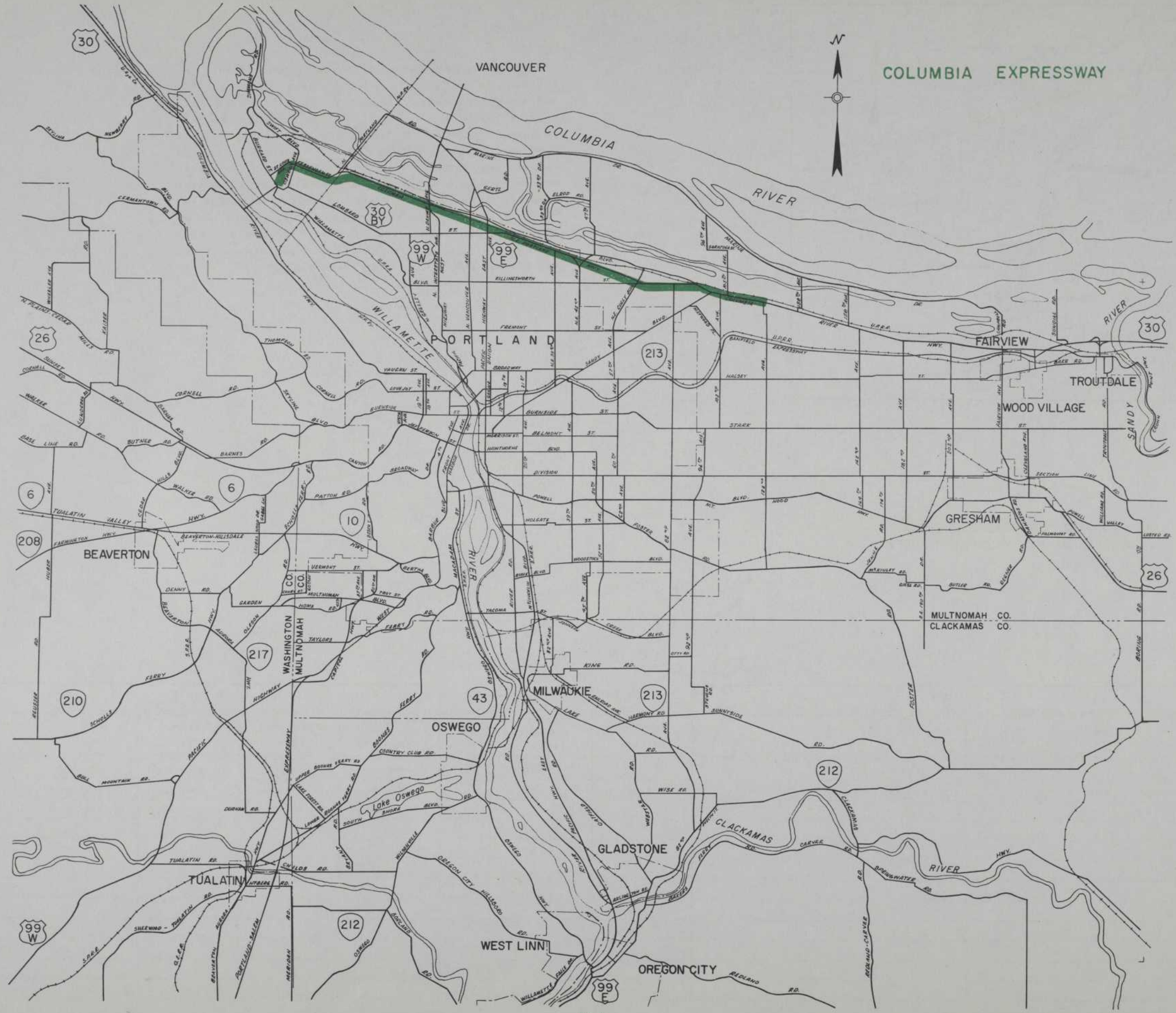
E8 - COLUMBIA EXPRESSWAY (US30-BYPASS)
ST. JOHNS BRIDGE - 122ND AVENUE

THIS EXPRESSWAY CONNECTS WITH THE ST. JOHNS BRIDGE AND FOLLOWS A LOCATION APPROXIMATING ST. LOUIS AND FESSENDEN STREETS AROUND THE ST. JOHNS AREA AND THEN TRAVERSES A VIRGIN LINE JUST SOUTH OF COLUMBIA BOULEVARD TO A POINT NEAR N.E. LOMBARD AND NINTH STREETS. AT SUCH POINT IT IS PLANNED TO RECONSTRUCT THE N.E. PORTLAND HIGHWAY TO THE VICINITY OF CULLY ROAD AND FROM THIS POINT EASTERLY TO FOLLOW A LOCATION JUST SOUTH OF KILLINGSWORTH STREET TO A POINT JUST BEYOND COLUMBIA BOULEVARD; THEN A VIRGIN LINE AGAIN WOULD BE UTILIZED JUST SOUTH OF THE UNION PACIFIC RAILROAD TRACKS AND NORTH OF PARKROSE TO A CONNECTION WITH 122ND AVENUE.

THIS OVER-ALL LOCATION GIVES A CONNECTING ROUTE ALONG THE NORTHERN TERMINUS OF SEVERAL OF THE MAJOR STREETS AND EXPRESSWAYS AND INTER-TIES CERTAIN OF THE NORTH-SOUTH FREEWAYS (DELAWARE, LAURELHURST AND CASCADE FREEWAYS). IT ALSO SERVICES THE INDUSTRIAL, WHOLESALE AND MANUFACTURING ESTABLISHMENTS ALONG THE UNION PACIFIC RAILROAD AND COLUMBIA BOULEVARD TO NORTH AND NORTHEAST PORTLAND. IT ALSO AFFORDS AN INDIRECT CONNECTION TO THE PORTLAND INTERNATIONAL AIRPORT AND THE PORTLAND STOCKYARDS.

THE EXPRESSWAY WILL BE CONSTRUCTED TO FOUR LANES THROUGHOUT ITS ENTIRE LENGTH AND IN THE PORTION BETWEEN THE LAURELHURST AND CASCADE FREEWAYS IT IS EXPECTED THAT BY 1975 SOME 30,000 VEHICLES PER DAY WILL USE THIS SECTION, WHILE IN THE SECTION EAST OF THE CASCADE FREEWAY TO 122ND AVENUE SOME 10,000 VEHICLES PER DAY WILL UTILIZE SUCH FACILITY. INTERCHANGE CONNECTIONS WILL BE MADE WITH THE FREEWAYS INTERSECTING THIS EXPRESSWAY. AT MAJOR STREETS AND OTHER EXPRESSWAY LOCATIONS, CONNECTIONS WILL BE MADE THROUGH SEPARATION IN GRADE WITH INTERCHANGE OF TRAFFIC POSSIBLE. SOME MINOR INTERSECTIONS WILL IN SOME LOCATIONS BE UNDER SIGNALIZED CONTROL, BUT THROUGHOUT MOST OF ITS LINEAL PORTION CROSS-TRAFFIC WILL BE RESTRICTED.

SECTION					COST*				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
ST. JOHNS BRIDGE	DELAWARE FREEWAY	3.80	20,000	4	1,330,000	900,000	2,230,000	2,100,000	4,330,000
DELAWARE FREEWAY	LAURELHURST FREEWAY	3.50	17,000	4	1,230,000	750,000	1,980,000	1,950,000	3,930,000
LAURELHURST FREEWAY	CASCADE FREEWAY	2.40	30,000	4	940,000	- -	940,000	1,350,000	2,290,000
CASCADE FREEWAY	122ND AVENUE	2.00	10,000	4	800,000	- -	800,000	1,280,000	2,080,000
TOTAL		11.70			4,300,000	1,650,000	5,950,000	6,680,000	12,630,000


COLUMBIA EXPRESSWAY
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GRESHAM
MULTNOMAH CO.
CLACKAMAS CO.
BEAVERTON
WASHINGTON
MULTNOMAH
MILWAUKIE
OSWEGO
Lake Oswego
GLADSTONE
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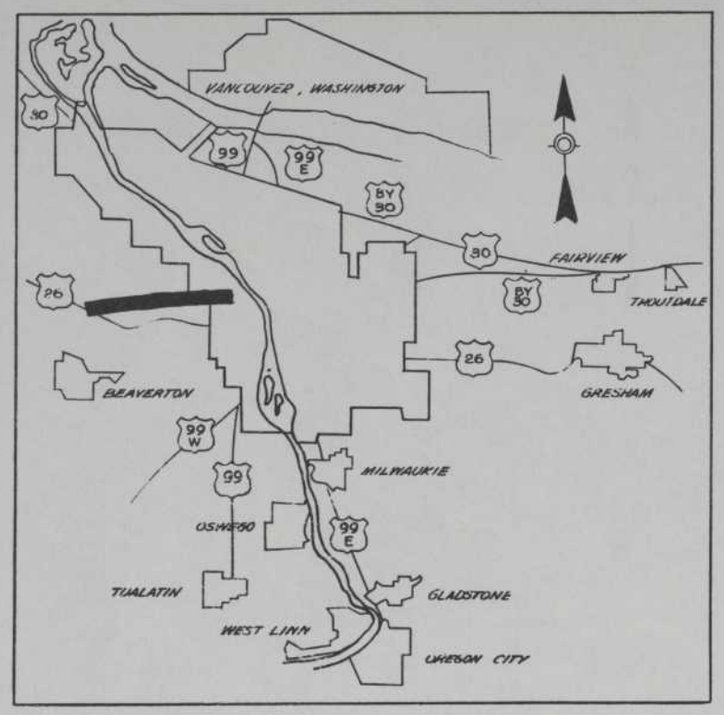
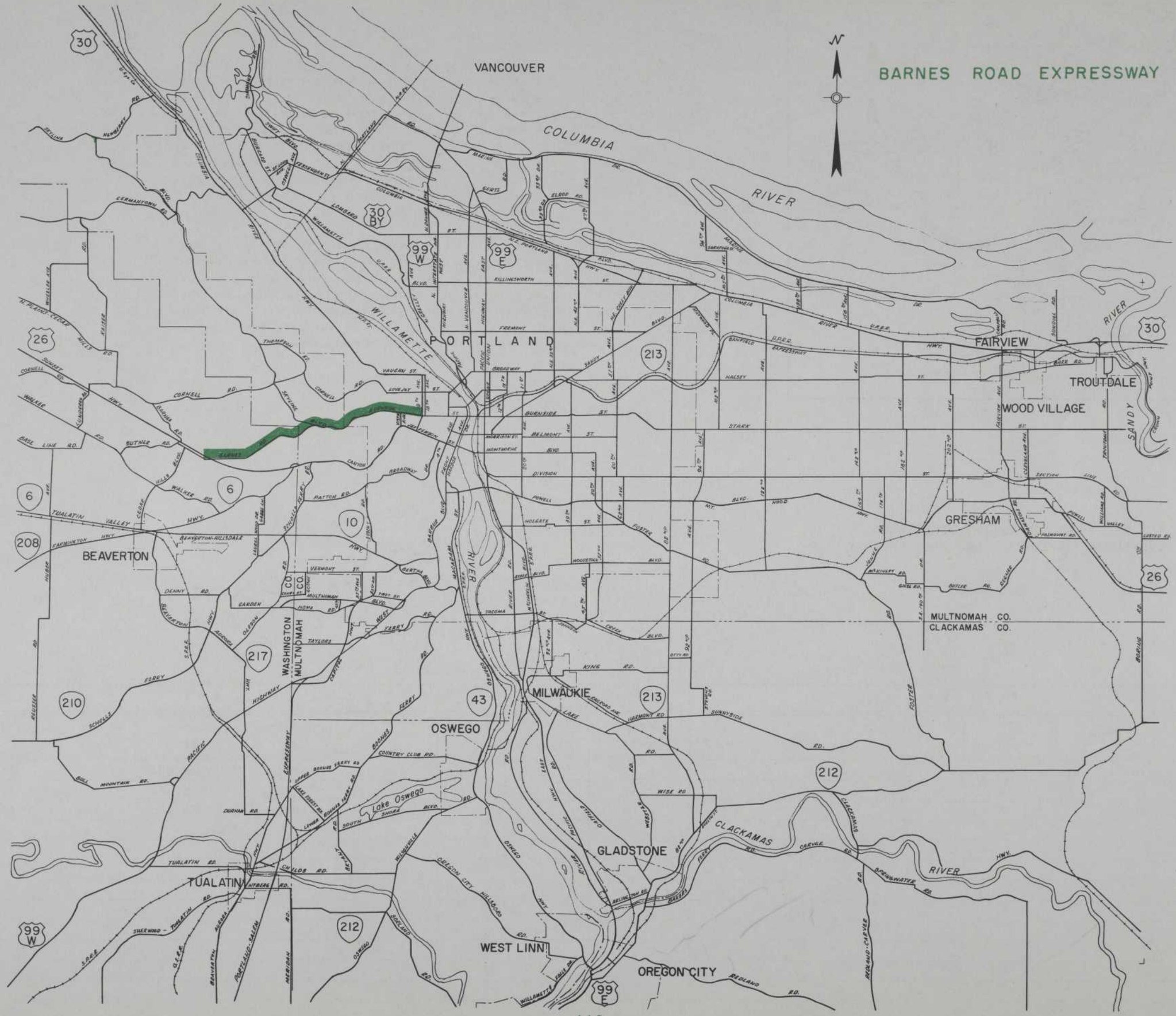


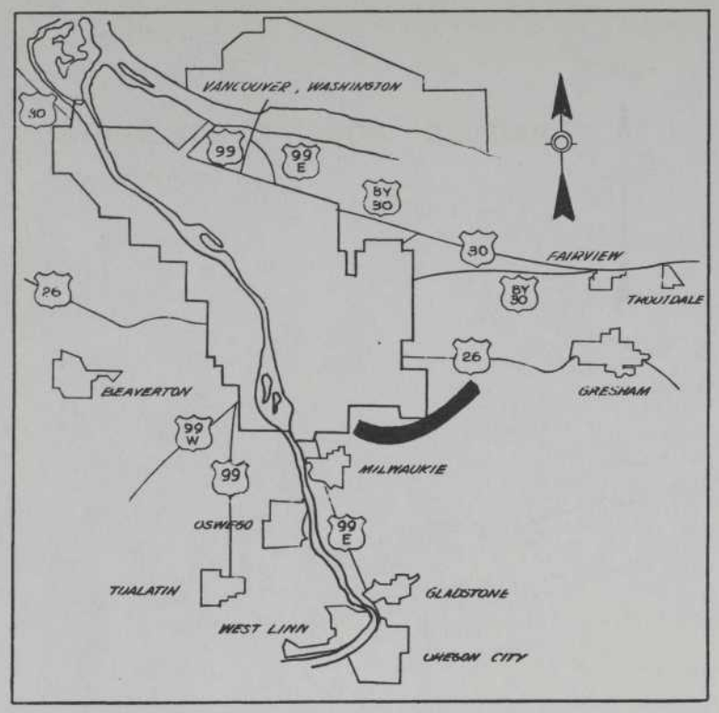
THE BARNES ROAD EXPRESSWAY IS SO LOCATED AND DESIGNED AS TO AFFORD A CERTAIN AMOUNT OF RELIEF FOR THE SUNSET FREEWAY, ESPECIALLY IN THE CANYON ROAD SECTION, WHICH WILL, IF OTHER ALTERNATE ROUTES ARE NOT IMPROVED, BECOME CONGESTED AS THE RESIDENTIAL AREA IN THE CEDAR HILLS VICINITY GROWS. THIS EXPRESSWAY FOLLOWS THE APPROXIMATE LOCATION OF THE EXISTING BARNES ROAD AND IT IS ANTICIPATED THAT BY 1975 SOME 8,000 VEHICLES PER DAY WILL USE THE SECTION IMMEDIATELY ADJACENT TO THE SUNSET FREEWAY WITH THESE VOLUMES INCREASING AS THE ROUTE APPROACHES THE CENTRAL BUSINESS DISTRICT UNTIL THE SECTION BETWEEN 23RD AVENUE AND STADIUM FREEWAY REACHES SOME 30,000 VEHICLES PER DAY.

E9 - BARNES ROAD EXPRESSWAY
SUNSET FREEWAY - STADIUM FREEWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
SUNSET FREEWAY	SKYLINE BOULEVARD	2.50	8,000	4	750,000	670,000	1,420,000	750,000	2,170,000
SKYLINE BOULEVARD	STADIUM FREEWAY	2.00	12,000	4	940,000	- -	940,000	1,600,000	2,540,000
TOTAL		4.50			1,690,000	670,000	2,360,000	2,350,000	4,710,000

BARNES ROAD EXPRESSWAY





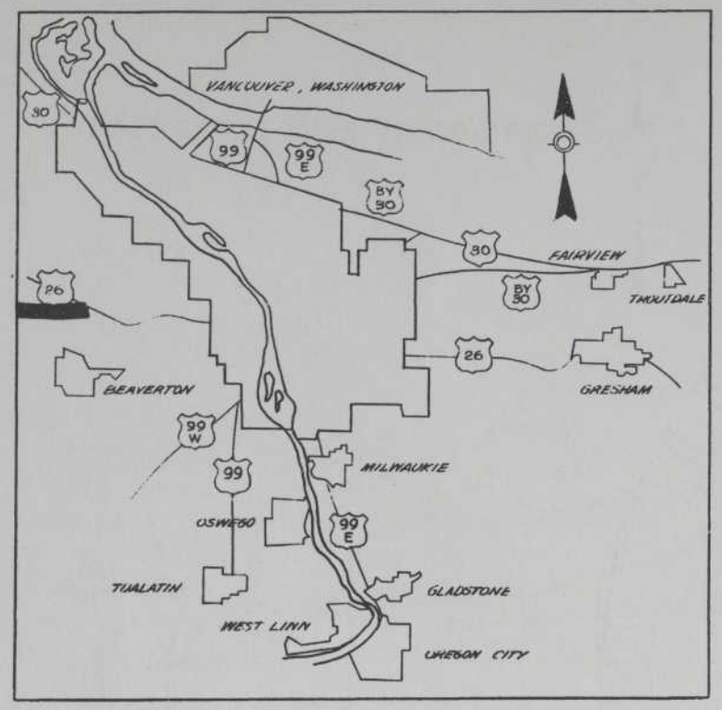
THE JOHNSON CREEK EXPRESSWAY IS A CONTINUATION OF THE SOUTHERLY CROSS-TOWN CIRCUMFERENTIAL ROUTING COMPOSED OF THE MULTNOMAH EXPRESSWAY, THE SELLWOOD FREEWAY, AND THE JOHNSON CREEK EXPRESSWAY. THIS HIGHWAY MAKES DIRECT CONNECTION WITH THE SELLWOOD FREEWAY AND LAURELHURST FREEWAY AND IS LOCATED ALONG A LINE APPROXIMATING THE NORTH BANK OF JOHNSON CREEK AND PARALLELING THE PORTLAND TRACTION COMPANY LINE TO IN THE VICINITY OF 122ND AVENUE WHERE IT MAKES CONNECTION WITH 122ND AVENUE AND MT. HOOD FREEWAY.

THIS EXPRESSWAY IS EXPECTED BY 1975 TO SERVE SOME 15,000 VEHICLES PER DAY IN THE SECTION BETWEEN THE LAURELHURST AND CASCADE FREEWAYS AND SOME 8,000 VEHICLES PER DAY IN THE EASTERLY SECTION THEREOF. THIS ROUTE WILL BECOME AN INTEGRAL PART OF THE RESIDENTIAL AND INDUSTRIAL DEVELOPMENT OF THE EAST AND SOUTHEAST DISTRICTS OF THE PORTLAND METROPOLITAN AREA.

E10 - JOHNSON CREEK EXPRESSWAY
LAURELHURST FREEWAY - MT. HOOD FREEWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
LAURELHURST FREEWAY	CASCADE FREEWAY	2.30	15,000	4	575,000	190,000	765,000	1,275,000	2,040,000
CASCADE FREEWAY	MT. HOOD FREEWAY	2.40	8,000	4	600,000	210,000	810,000	1,290,000	2,100,000
TOTAL		4.70			1,175,000	400,000	1,575,000	2,565,000	4,140,000

JOHNSON CREEK EXPRESSWAY



THIS EXPRESSWAY HAS AS ITS OBJECTIVE RELIEF FOR THE TUALATIN VALLEY HIGHWAY, WHICH IT IS ANTICIPATED BY THE END OF THE PERIOD OF STUDY OF THIS REPORT, WILL, EVEN THOUGH IT IS CURRENTLY BEING IMPROVED, DEVELOP CAPACITIES WHICH WILL TEND TO CONGEST IT. TO THIS END AN ALTERNATE LOCATION BETWEEN HILLSBORO AND THE SUNSET FREEWAY WAS FELT ADVISABLE. THE LOCATION OF THIS EXPRESSWAY IS GENERALLY NORTH OF THE COMMUNITY OF ORENCO AND INTERSECTS THE SUNSET FREEWAY IN CLOSE PROXIMITY TO CORNELL ROAD; THUS, THE IMPROVED CORNELL ROAD, THE SUNSET FREEWAY, AND THE BARNES ROAD EXPRESSWAY WOULD BE AVAILABLE FOR USE BY THIS TRAFFIC, WHICH IT IS EXPECTED IN 1975 WOULD AMOUNT TO 8,000 VEHICLES PER DAY.

E11 - HILLSBORO EXPRESSWAY
WHEELER AVENUE - SUNSET FREEWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
WHEELER AVENUE	SUNSET FREEWAY	1.25	8,000	4	225,000	155,000	380,000	350,000	730,000
TOTAL		1.25			225,000	155,000	380,000	350,000	730,000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HILLSBORO EXPRESSWAY
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RIVER
PORTLAND
WILLAMETTE
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FAIRVIEW
TROUTDALE
WOOD VILLAGE
SANDY
RIVER
GRESHAM
BEAVERTON
TUALATIN
WASHINGTON CO.
MULTNOMAH CO.
MILWAUKIE
OSWEGO
Lake Oswego
GLADSTONE
CLACKAMAS
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OREGON CITY
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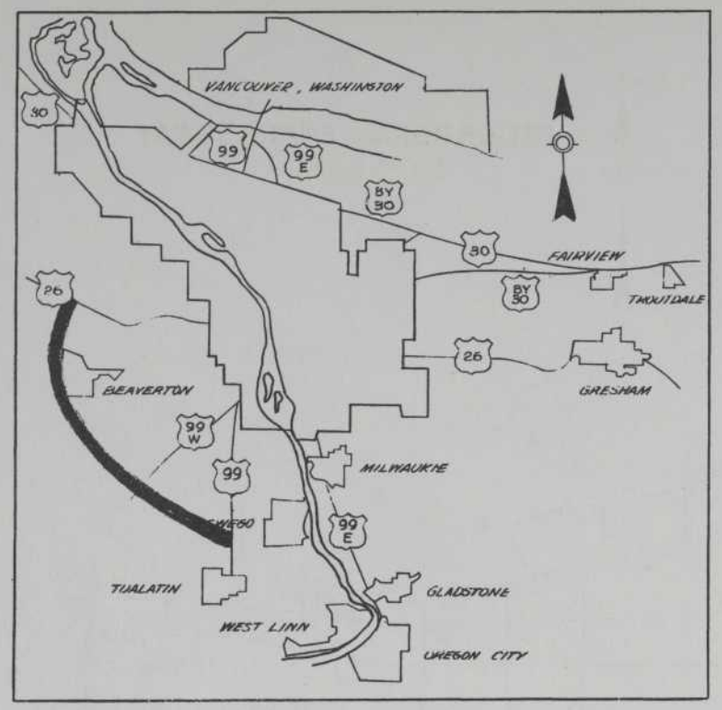


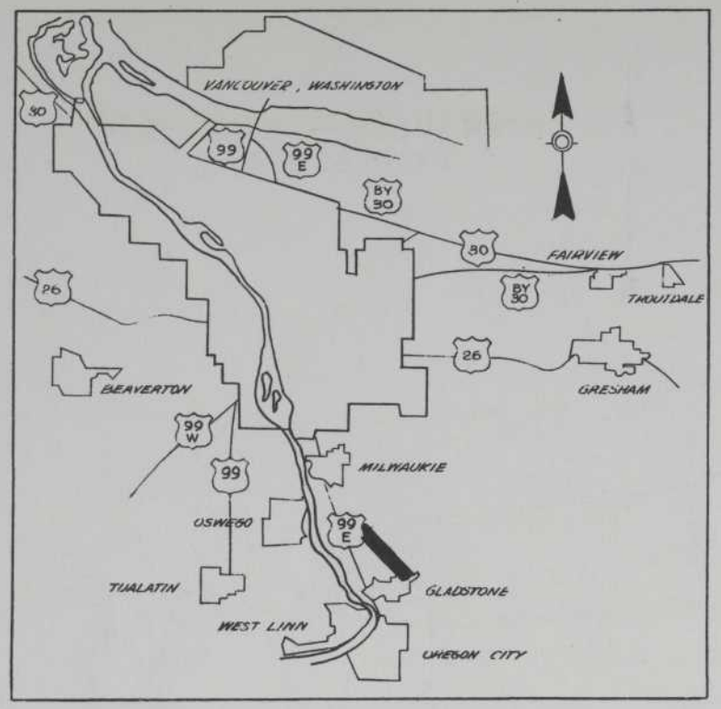
E12 - CEDAR HILLS-TUALATIN EXPRESSWAY
SUNSET FREEWAY - PORTLAND-SALEM FREEWAY

THE CEDAR HILLS-TUALATIN EXPRESSWAY FORMS A PART OF A WESTERLY CIRCUMFERENTIAL ROUTING OF THE METROPOLITAN AREA AND AT THE SAME TIME AFFORDS CERTAIN BYPASS CHARACTERISTICS BETWEEN THE PORTLAND-SALEM FREEWAY, THE SUNSET FREEWAY AND LOWER COLUMBIA RIVER HIGHWAY FOR WILLAMETTE VALLEY TRIPS DESTINED FOR THE OREGON COASTAL AREAS. THIS HIGHWAY FOLLOWS, THROUGHOUT MOST OF ITS DISTANCE, THE ROUTING OF THE SOUTHERN PACIFIC COMPANY AND SPOKANE, PORTLAND AND SEATTLE RAILWAY LOCATION. IT MAKES CONNECTION TO THE SUNSET FREEWAY IN THE VICINITY OF CEDAR MILL. IT BYPASSES BEAVERTON TO THE WEST AND TRAVERSES THROUGH THE CENTRAL PORTION OF THE COMMUNITY OF TIGARD PARALLEL TO THE EXISTING RAILROAD LOCATION AND MAKES CONNECTION WITH THE PORTLAND-SALEM FREEWAY THROUGH UTILIZATION OF THE UPPER BOONES FERRY ROAD TRAFFIC INTERCHANGE. THIS HIGHWAY ROUTING, WHEN COUPLED WITH THE SOUTHERLY EXTENSION OF THE LAURELHURST FREEWAY AND THE ST. JOHNS-SUNSET EXPRESSWAY, WOULD AFFORD A COMPLETE WESTERLY AND SOUTHERLY CIRCUMFERENTIAL ROUTING AROUND THE PORTLAND METROPOLITAN AREA.

IT IS EXPECTED THAT BY 1975 TRAFFIC VOLUMES OF 15,000 VEHICLES PER DAY WOULD BE USING THIS FACILITY JUST SOUTH OF BEAVERTON AND THESE VOLUMES WILL DIMINISH TO 8,000 VEHICLES PER DAY BETWEEN TIGARD AND THE PORTLAND-SALEM FREEWAY AND 6,000 VEHICLES PER DAY BETWEEN BEAVERTON AND THE SUNSET FREEWAY.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
SUNSET FREEWAY	BEAVERTON	2.35	6,000	4	500,000	225,000	725,000	950,000	1,675,000
BEAVERTON	MULTNOMAH EXPRESSWAY	1.57	15,000	4	310,000	- -	310,000	160,000	470,000
MULTNOMAH EXPRESSWAY	SCHOLLS HIGHWAY	1.66	10,000	4	350,000	120,000	470,000	90,000	560,000
SCHOLLS HIGHWAY	TIGARD	1.42	9,000	4	340,000	170,000	510,000	220,000	730,000
TIGARD	PORTLAND-SALEM FREEWAY	2.10	8,000	4	490,000	390,000	880,000	500,000	1,380,000
TOTAL		9.10			1,990,000	905,000	2,895,000	1,920,000	4,815,000

CEDAR HILLS – TUALATIN EXPRESSWAY

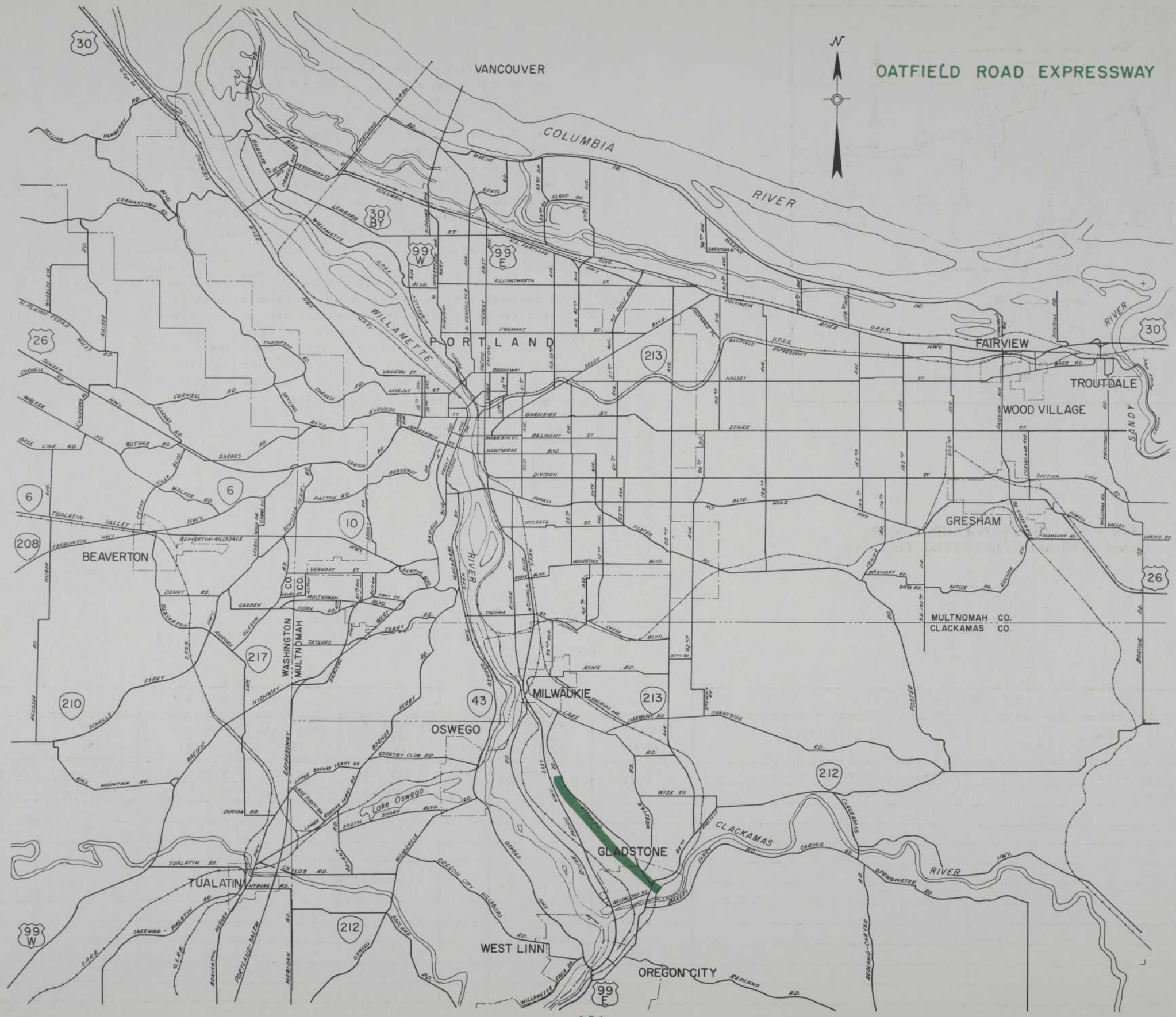


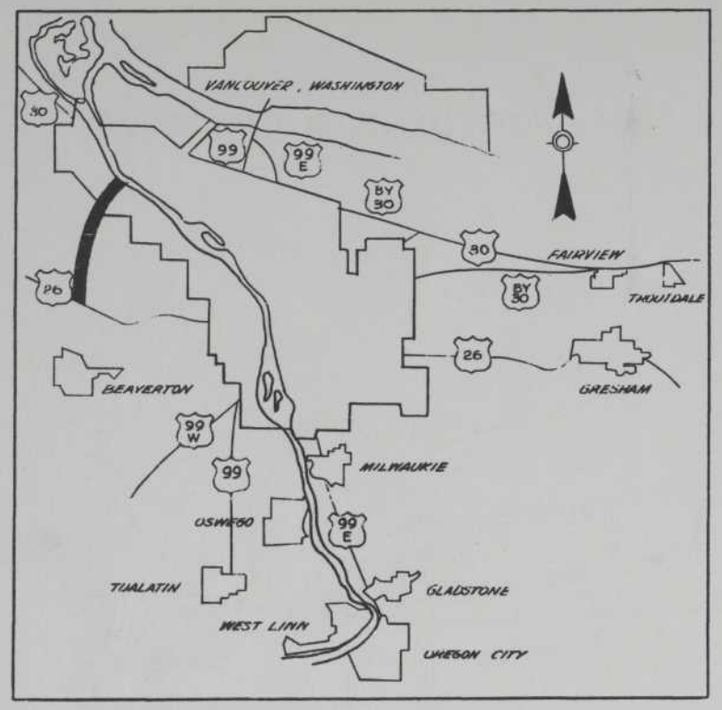
The Oatfield Road Expressway is along the approximate location of the existing Oatfield Road lying just to the south thereof throughout most of its length. It is designed to serve as a relief for the present Pacific Highway East, US99E, (McLoughlin Boulevard) between the Communities of Gladstone and Oak Grove. It is not felt that it would be practical to convert the present location of McLoughlin Boulevard from major street to expressway standards, but through usage of the southern portion of the Cascade Freeway between Oregon City and Gladstone coupled with this Expressway, it would be possible to make direct connection to the Laurelhurst Freeway and to McLoughlin Boulevard north of Oak Grove. Such Expressway is expected to care for some 10,000 vehicles per day by 1975.

E13 - OATFIELD ROAD EXPRESSWAY
LAURELHURST FREEWAY - CASCADE FREEWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
McLOUGHLIN BOULEVARD	CASCADE FREEWAY	3.10	10,000	4	975,000	165,000	1,140,000	760,000	1,900,000
TOTAL		3.10			975,000	165,000	1,140,000	760,000	1,900,000

OATFIELD ROAD EXPRESSWAY





THIS EXPRESSWAY FOLLOWS THE APPROXIMATE LOCATION OF GERMANTOWN ROAD THROUGHOUT THE GREATER PORTION OF ITS LENGTH CONNECTING DIRECTLY WITH THE ST. JOHNS BRIDGE AND THE INDUSTRIAL FREEWAY AT ITS NORTHERN TERMINUS AND WITH THE SUNSET FREEWAY AND CORNELL ROAD AS ITS SOUTHERN TERMINUS. THE EXPRESSWAY COMPLETES AN OUTER CIRCUMFERENTIAL WEST SIDE ROUTE IN THE PORTLAND AREA. IT CONNECTS WITH THE CEDAR HILLS-TUALATIN EXPRESSWAY COMPLETING THE WEST SIDE LINK AND HAS A DUAL FUNCTION OF MAKING A DIRECT CONNECTION TO A NORTHERLY CIRCUMFERENTIAL ROUTING VIA THE ST. JOHNS BRIDGE AND COLUMBIA EXPRESSWAY.

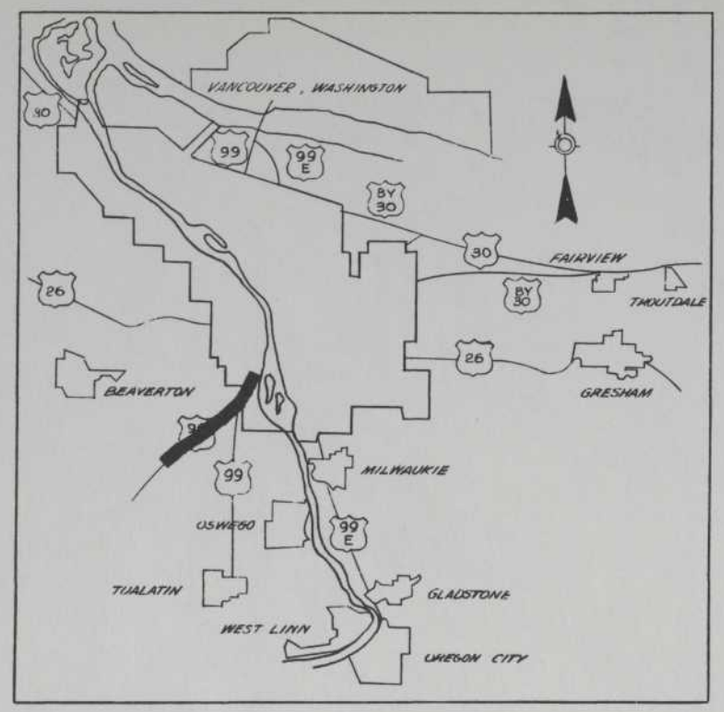
THIS EXPRESSWAY IS EXPECTED TO CARE FOR SOME 5,000 VEHICLES PER DAY BY 1975, YET AN UNPRECEDENTED SUBURBAN RESIDENTIAL GROWTH IN THIS AREA COULD CAUSE THESE VOLUMES TO INCREASE. IT IS NOT, HOWEVER, ANTICIPATED AT THIS TIME THAT THEY WILL. THE HIGHWAY IS CONSTRUCTED TO FOUR LANES THROUGHOUT WITH TRAFFIC INTERCHANGES AT ITS TERMINAL POINTS, SKYLINE BOULEVARD AND AT ITS CROSSING OF THE CORNELL ROAD.

E14 - ST. JOHNS-SUNSET EXPRESSWAY
SUNSET FREEWAY - INDUSTRIAL FREEWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
ST. JOHNS BRIDGE	SUNSET FREEWAY	10.50	5,000	4	3,240,000	360,000	3,600,000	200,000	3,800,000
TOTAL		10.50			3,240,000	360,000	3,600,000	200,000	3,800,000

ST. JOHNS — SUNSET EXPRESSWAY

MAJOR STREETS



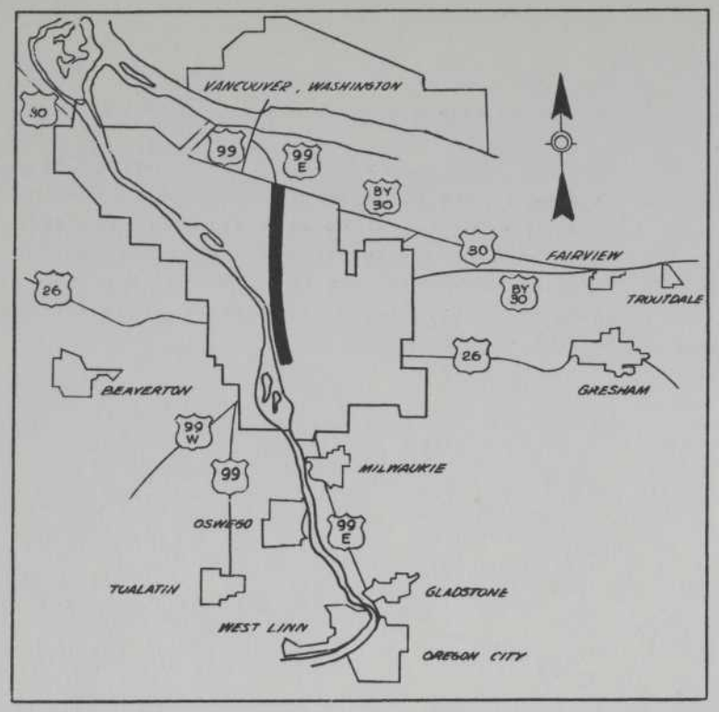
M1 - BARBUR BOULEVARD
BERTHA BOULEVARD - TIGARD

THAT PORTION OF THIS PROJECT BETWEEN BERTHA BOULEVARD AND THE PORTLAND-SALEM FREEWAY IS ONE OF RATHER HIGH PRIORITY AS IT SHOULD BE ACCOMPLISHED IN THE INTERIM AWAITING THE CONSTRUCTION OF THE WASHINGTON COUNTY LINE-HARBOR DRIVE FREEWAY SECTION OF THE PORTLAND-SALEM FREEWAY. ALTHOUGH TRAFFIC VOLUMES IN 1975 WOULD AMOUNT TO ONLY 10,000 VEHICLES PER DAY IN THE CAPITOL HIGHWAY-BERTHA BOULEVARD SECTION, TRAFFIC VOLUMES IN THE FIRST FEW YEARS WOULD BE CONSIDERABLE. SUCH VOLUMES WOULD RANGE AS HIGH AS 30,000 VEHICLES PER DAY.

THE TYPE OF WORK ANTICIPATED WOULD AMOUNT TO BRINGING CERTAIN KEY INTERSECTIONS UNDER SIGNALIZED CONTROL AND DEVELOPING CHANNELIZED LEFT-TURN MOVEMENTS; IN OTHER WORDS, ESTABLISHING A PROGRESSIVE SIGNAL SYSTEM WITH ORDERLY CONTROL OF LEFT-TURNING AND CROSS-TRAFFIC MOVEMENTS COUPLED WITH CONTROL OF SHOULDER PARKING.

THE CONVERSION OF THE PRESENT PACIFIC HIGHWAY WEST (US99W) BETWEEN TIGARD AND THE PORTLAND-SALEM FREEWAY IS NECESSARY TO PARTIALLY CONTROL ACCESS THROUGH CONSTRUCTING A RAISED MEDIAN AND INSTALLING CERTAIN LEFT-TURN ISLANDS AT STRATEGIC POINTS IN THIS SECTION. IT MAY ALSO BE NECESSARY TO PUT CERTAIN INTERSECTIONS UNDER SIGNALIZED CONTROL. IT IS ANTICIPATED THAT IN 1975 THIS SECTION OF THE PACIFIC HIGHWAY WEST WILL BE SERVICING SOME 20,000 VEHICLES PER DAY.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
S.W. BERTHA BOULEVARD	WASHINGTON COUNTY LINE	3.65	8,000	4	130,000	- -	130,000	- -	130,000
WASHINGTON COUNTY LINE	TIGARD	1.20	20,000	4	200,000	- -	200,000	- -	200,000
TOTAL		4.85			330,000	- -	330,000	- -	330,000



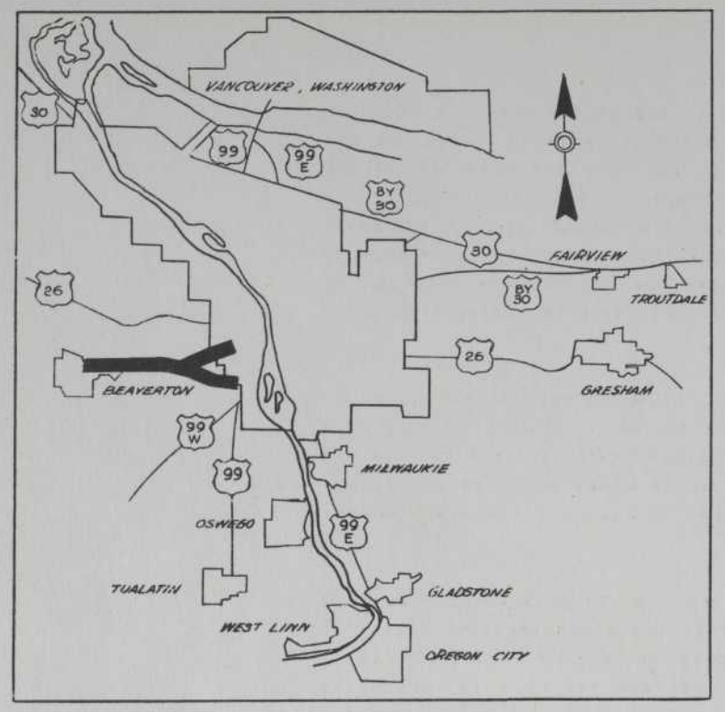
M2 - UNION-GRAND AVENUE ONE-WAY COUPLET
LOMBARD STREET - DIVISION STREET

THIS PROJECT IS ONE OF CONSIDERABLE MERIT IN THAT UNION AVENUE IS PRESENTLY CARRYING TRAFFIC BEYOND ITS PRACTICAL CAPACITY, AND ONCE THE MORRISON BRIDGE AND HAWTHORNE BRIDGE APPROACHES ARE RECONSTRUCTED AND OPEN TO TRAFFIC, IT WILL BE NECESSARY TO MAKE THE SOUTHERLY PORTION OF THIS OVER-ALL PROJECT A ONE-WAY COUPLET IMMEDIATELY. THE BRIDGE APPROACHES HAVE BEEN SO DESIGNED TO SERVICE TRAFFIC ON UNION AND GRAND AVENUES AS ONE-WAY.

AT THE OUTSET IT WOULD ONLY BE NECESSARY TO PUT THESE STREETS UNDER ONE-WAY. IT IS FELT THAT AT A LATER DATE IT WILL BE NECESSARY TO CONTINUE THE ONE-WAY COUPLET NORTHERLY BEYOND BROADWAY SO AS TO ADEQUATELY SERVICE TRAFFIC DESIRING TO USE THIS IMPORTANT NORTH-SOUTH ARTERIAL.

IT IS REALIZED THAT THIS ARTERIAL WILL HAVE TO CARE FOR HEAVY TRAFFIC FOR A CONSIDERABLE PERIOD OF TIME AWAITING FINAL CONSTRUCTION OF CERTAIN FREEWAYS WHICH WILL ULTIMATELY RELIEVE THE LOAD ON THIS MAJOR STREET. EVEN THOUGH THE FREEWAY SYSTEM IS CONSTRUCTED AND IN OPERATION, IT IS EXPECTED THAT THIS ONE-WAY COUPLET WILL SERVICE SOME 30,000 VEHICLES PER DAY SOUTH OF THE FREMONT FREEWAY AND SOME 20,000 VEHICLES PER DAY NORTH THEREOF. TRAFFIC SIGNALS WOULD, OF NECESSITY, HAVE TO BE INSTALLED ON GRAND AVENUE PAIRING WITH THOSE PRESENTLY INSTALLED ON UNION AVENUE SO THAT AN ORDERLY PROGRESSION AND FLOW OF TRAFFIC COULD BE ACCOMMODATED. IT WILL BE NECESSARY TO WIDEN SOME PORTIONS OF GRAND AVENUE AND ACQUIRE RIGHT OF WAY FOR NEW CONSTRUCTION IN THE NORTHERLY PORTIONS WHERE GRAND AVENUE IS NOT PRESENTLY IMPROVED.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
N.E. LOMBARD STREET	FREMONT FREEWAY	2.08	17,000	4	350,000	- -	350,000	300,000	650,000
FREMONT FREEWAY	N.E. BROADWAY	0.82	30,000	4	135,000	- -	135,000	400,000	535,000
N.E. BROADWAY	EAST BURNSIDE STREET	0.83	30,000	8	85,000	- -	85,000	- -	85,000
EAST BURNSIDE STREET	S.E. DIVISION STREET	1.14	30,000	8	50,000	500,000	550,000	95,000	645,000
TOTAL		4.87			620,000	500,000	1,120,000	795,000	1,915,000



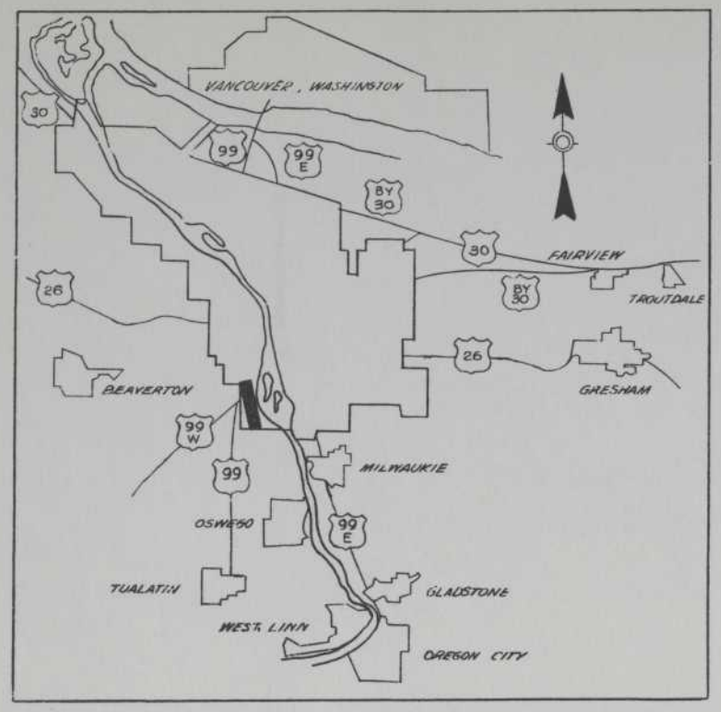
M3 - BEAVERTON-HILLSDALE HIGHWAY (ORE10)
AND BERTHA BOULEVARD
BEAVERTON - BARBUR BOULEVARD

THIS PROJECT CALLS FOR THE IMPROVEMENT OF THE BEAVERTON-HILLSDALE HIGHWAY BETWEEN BEAVERTON AND S.W. BARBUR BOULEVARD AS WELL AS S.W. BERTHA BOULEVARD TO MAJOR STREET STANDARDS. PROJECTS ARE PRESENTLY BEING CONSTRUCTED ON THE BEAVERTON-HILLSDALE HIGHWAY TO FOUR LANES. LATE IN THE PERIOD OF STUDY OF THIS REPORT, TRAFFIC DEMANDS AMOUNTING TO SOME 10,000 VEHICLES PER DAY IN THE SCHOLLS HIGHWAY-BERTHA BOULEVARD SECTION ARE EXPECTED. UNTIL THE GLENCULLEN FREEWAY IS BUILT, THESE VOLUMES MAY DOUBLE AND WILL REQUIRE PARTIAL CONTROL OF ACCESS AND PROHIBITION OF PARKING ALONG THE FACILITY.

THE IMPORTANCE OF THIS HIGHWAY CANNOT BE OVEREMPHASIZED IN SERVICING NEIGHBORHOOD TRAFFIC AND HOME-TO-WORK TRIPS AND AS A CONNECTION BETWEEN THE TUALATIN VALLEY HIGHWAY, THE SUNSET FREEWAY, AND THE SELLWOOD FREEWAY AND EASTERLY. THUS, IT BECOMES IMPORTANT IN THE OVER-ALL ACCOMMODATION OF TRAFFIC IN THE METROPOLITAN AREA.

SLAVIN RD.-BARBUR BLVD. INTERSECTION

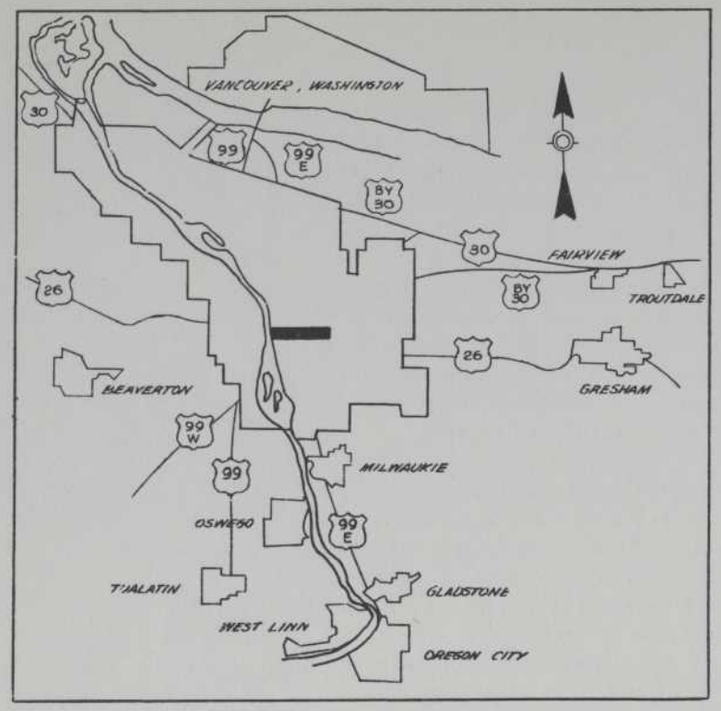
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
BEAVERTON	WASHINGTON COUNTY LINE	2.94	10,000	4	350,000	- -	350,000	250,000	600,000
WASHINGTON COUNTY LINE	BARBUR BOULEVARD	3.36	10,000	4	410,000	190,000	600,000	75,000	675,000
BERTHA BOULEVARD SECTION		0.91	10,000	4	160,000	120,000	280,000	40,000	320,000
TOTAL		7.21			920,000	310,000	1,230,000	365,000	1,595,000



IT IS DESIRED TO IMPROVE THIS STREET TO FOUR-LANE STANDARDS SO AS TO INCREASE THE CARRYING CAPACITY OF A PRESENTLY DEFICIENT ARTERIAL. THIS PORTION OF THE OSWEGO HIGHWAY CARRIES A VERY HEAVY LOAD OF HOME-TO-WORK TRIPS AND WILL BECOME AN EVER INCREASINGLY IMPORTANT LINK IN THE NETWORK OF STREETS AND HIGHWAYS IN THE PORTLAND AREA WHEN THE OSWEGO EXPRESSWAY AND THE SELLWOOD FREEWAY ARE COMPLETED. IT IS EXPECTED THAT BY 1975 THIS STREET WILL CARE FOR SOME 25,000 VEHICLES PER DAY. SOME OF THE IMPROVEMENT IN THIS PROJECT COULD TAKE PLACE WITHOUT A HEAVY EXPENDITURE THROUGH NOMINAL WIDENING (FROM 36 FT. TO 44 FT.) AND PROHIBITION OF PARKING.

M4 - MACADAM STREET
HAMILTON STREET - SELLWOOD BRIDGE

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
S.W. HAMILTON STREET	SELLWOOD BRIDGE	1.85	25,000	4	350,000	- -	350,000	- -	350,000
TOTAL		1.85			350,000	- -	350,000	- -	350,000

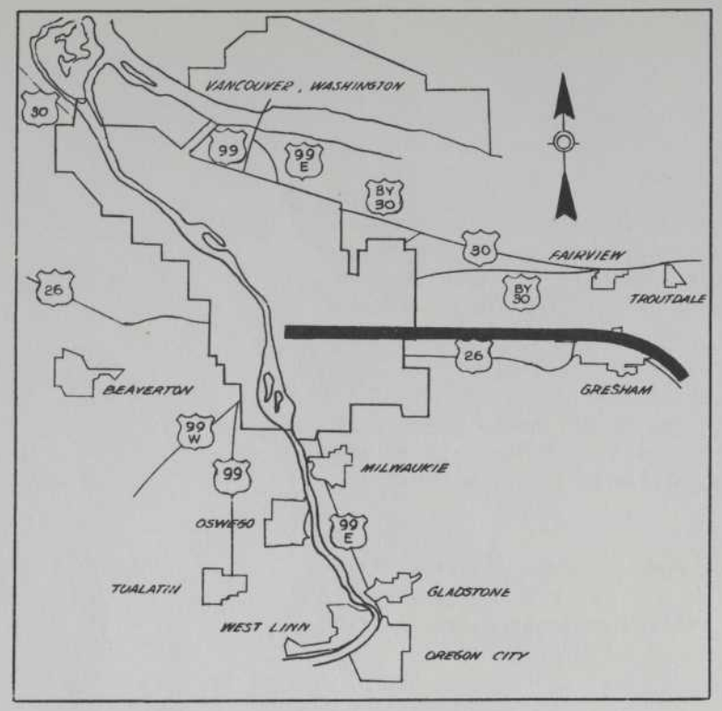


THIS PROJECT CONSIDERS THE RECONSTRUCTED EASTERLY APPROACH TO THE HAWTHORNE BRIDGE ON A VIADUCT AND THE EXTENSION OF A ONE-WAY COUPLET ON HAWTHORNE AND MADISON STREETS THROUGHOUT MOST OF THE EAST SIDE AREA TO CARE FOR TRAFFIC DESIRING TO USE THIS BRIDGE. SOME 25,000 VEHICLES PER DAY WOULD DESIRE TO USE THIS COUPLET JUST EAST OF GRAND AVENUE BY 1975. WHILE IT IS EXPECTED THAT THE HAWTHORNE BRIDGE WOULD SERVE SOME 30,000 VEHICLES PER DAY, THE TRAFFIC ON THIS BRIDGE WILL, UNTIL THE MT. HOOD FREEWAY BRIDGE IS CONSTRUCTED, BE CONSIDERABLY HIGHER.

IT WILL BE NECESSARY TO ADD ADDITIONAL TRAFFIC SIGNAL CONTROL ON THE ONE-WAY COUPLET PORTION OF THE PROJECT SO THAT AN ORDERLY PROGRESSION OF TRAFFIC WOULD RESULT.

M6 - HAWTHORNE BRIDGE APPROACH AND HAWTHORNE-MADISON STREET ONE-WAY COUPLET
WILLAMETTE RIVER - 50TH AVENUE

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
WILLAMETTE RIVER	S.E. GRAND AVENUE	0.38	25,000	4	- -	1,800,000	1,800,000	1,000,000	2,800,000
S.E. GRAND AVENUE	S.E. 20TH AVENUE	0.79	25,000	8	140,000	- -	140,000	- -	140,000
S.E. 20TH AVENUE	S.E. 39TH AVENUE	1.15	15,000	4	215,000	- -	215,000	125,000	340,000
S.E. 39TH AVENUE	S.E. 50TH AVENUE	0.48	15,000	4	105,000	- -	105,000	50,000	155,000
TOTAL		2.80			460,000	1,800,000	2,260,000	1,175,000	3,435,000

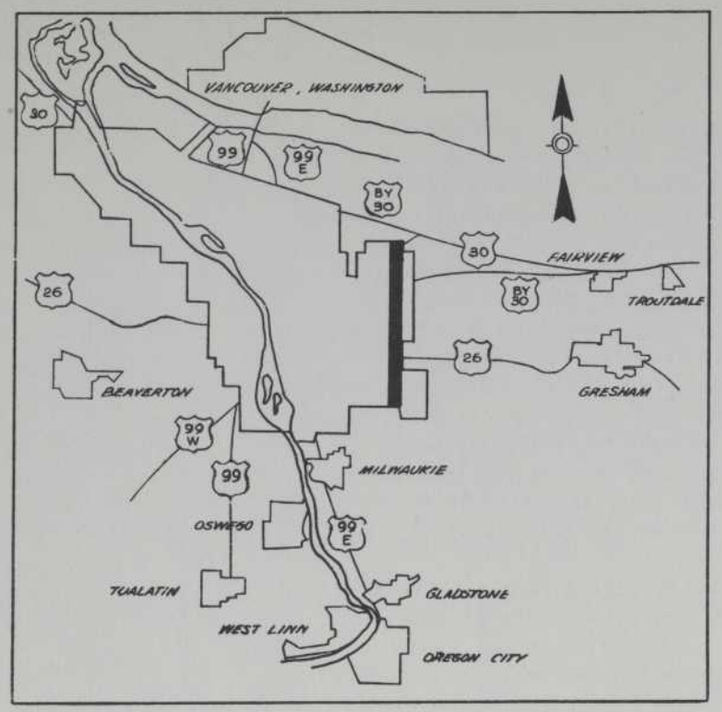


THIS PROJECT CALLS FOR THE IMPROVEMENT OF DIVISION STREET THROUGHOUT ITS ENTIRE LENGTH. SUCH IMPROVEMENT WOULD BE TWOFOLD IN SCOPE: (1) TO BETTER SERVE THE FAST GROWING EAST SIDE RESIDENTIAL AREA BEYOND THE CORPORATE LIMITS OF PORTLAND, AND (2) AT THE SAME TIME TO ARRANGE, EITHER THROUGH THE WIDENING OF DIVISION STREET PROPER OR THE ESTABLISHMENT OF A ONE-WAY STREET COUPLET IN THE AREA BETWEEN 21ST AVENUE AND 50TH AVENUE, FOR INTERNAL TRAFFIC TO MOVE WITHOUT STAGNATION. SUCH IMPROVEMENT WOULD AFFORD RELIEF FOR THE PRESENTLY OVERCROWDED POWELL VALLEY ROAD AND MT. HOOD HIGHWAY AS WELL AS OTHER PARALLELING FACILITIES.

IT IS EXPECTED THAT THE PORTIONS OF THIS STREET WITHIN PORTLAND PROPER WOULD ACCOMMODATE SOME 20,000 VEHICLES PER DAY BY 1975 AND THAT THE SECTIONS OF THIS STREET EAST OF THE CORPORATE LIMITS WOULD CARE FOR A LESSER VOLUME. THIS STREET, IN COMMON WITH MANY OF THE OTHER MAJOR STREETS, WOULD HAVE HIGHER TRAFFIC VOLUMES IN 1960 AND 1965 THAN THEY WOULD IN 1975 OR UNTIL FLANKING FREEWAYS AND EXPRESSWAYS ARE CONSTRUCTED.

M7 - DIVISION STREET
21ST AVENUE - POWELL VALLEY ROAD

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
EASTSIDE EXPRESSWAY	LAURELHURST FREEWAY	1.12	20,000	4	200,000	- -	200,000	- -	200,000
LAURELHURST FREEWAY	S.E. 60TH AVENUE	0.98	20,000	4	175,000	- -	175,000	- -	175,000
S.E. 60TH AVENUE	CASCADE FREEWAY	1.12	20,000	4	190,000	- -	190,000	- -	190,000
CASCADE FREEWAY	122ND AVENUE	2.00	15,000	4	350,000	- -	350,000	- -	350,000
122ND AVENUE	S.E. 162ND AVENUE	2.00	10,000	4	330,000	- -	330,000	- -	330,000
S.E. 162ND AVENUE	GRESHAM ROAD	3.20	8,000	4	530,000	- -	530,000	- -	530,000
GRESHAM ROAD	POWELL VALLEY ROAD	1.30	5,000	4	210,000	- -	210,000	- -	210,000
TOTAL		11.72			1,985,000	- -	1,985,000	- -	1,985,000

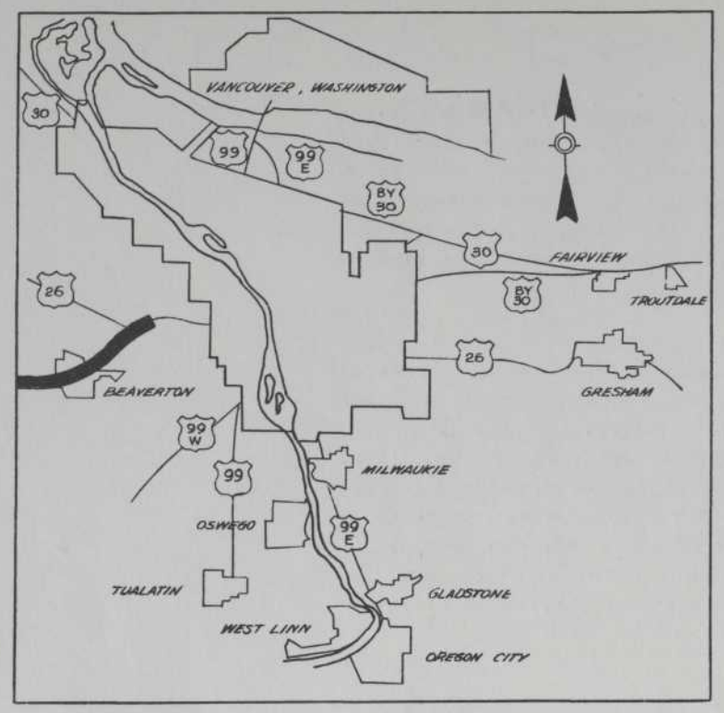


M8 - 82ND AVENUE
SANDY BOULEVARD - DUKE STREET

THIS IMPROVEMENT CALLS FOR THE INSTALLATION OF LEFT-TURN REFUGES AND THE PROVISION OF ADDITIONAL RIGHT-TURNING LANES, ET CETERA, AT CERTAIN KEY INTERSECTIONS THROUGHOUT THE LENGTH OF 82ND AVENUE. NO ADDITIONAL WIDENING WOULD TAKE PLACE, AS ALL WORK WOULD BE DONE WITHIN THE LIMITS OF THE PRESENT CURB LINE OR RIGHT OF WAY LINE.

SUCH WORK IS NECESSARY TO HANDLE AN EVER-INCREASING DEMAND FOR USAGE OF THIS ARTERIAL PENDING COMPLETION OF THE CASCADE FREEWAY. EVEN WITH THE CASCADE FREEWAY COMPLETED, THE CENTRAL PORTION OF 82ND AVENUE BETWEEN EAST BURNSIDE STREET AND MT. HOOD FREEWAY WILL STILL SERVE SOME 22,000 TO 25,000 VEHICLES PER DAY AND EVEN THE NORTHERLY AND SOUTHERLY PORTIONS OF THIS VERY IMPORTANT STREET WOULD CARE FOR SOME 15,000 VEHICLES PER DAY BY 1975. IT IS TO BE UNDERSTOOD THAT THE 1955-1960 ADT ON THIS ARTERIAL WOULD BE CONSIDERABLY HIGHER.

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
SANDY BOULEVARD	BANFIELD FREEWAY	1.27	15,000	4	50,000	- -	50,000	- -	50,000
BANFIELD FREEWAY	BURNSIDE STREET	0.75	20,000	4	30,000	- -	30,000	- -	30,000
BURNSIDE STREET	S.E. POWELL BOULEVARD	1.72	22,000	4	65,000	- -	65,000	- -	65,000
S.E. POWELL BOULEVARD	S.E. DUKE STREET	1.45	20,000	4	50,000	- -	50,000	- -	50,000
TOTAL		5.19			195,000	- -	195,000	- -	195,000

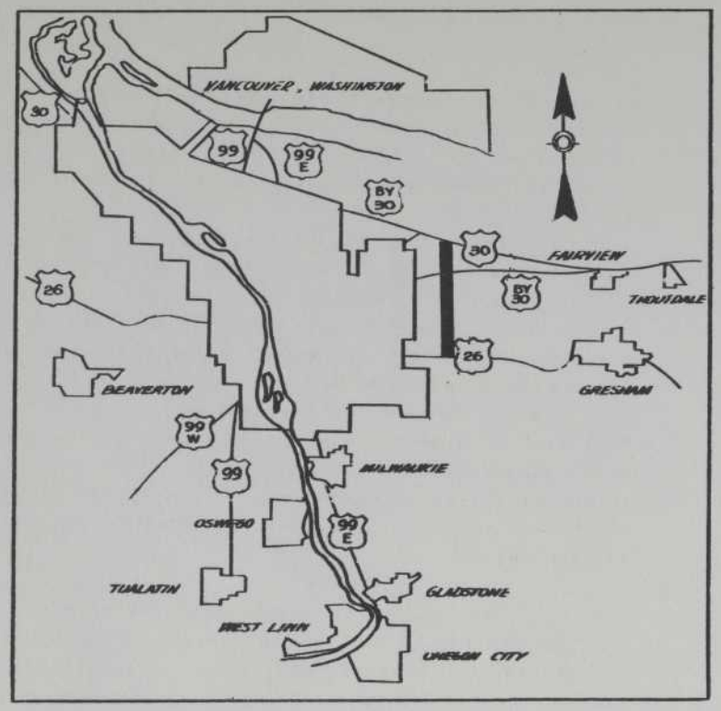


THIS PROJECT RECOGNIZES THE EVER INCREASING DEMAND FOR USAGE ON THE TUALATIN VALLEY HIGHWAY, ORE6, BETWEEN REEDVILLE AND SYLVAN, AND ESPECIALLY IN THE WEST SLOPE AREA DUE TO THE RAPIDLY GROWING RESIDENTIAL AREAS FLANKING THIS ARTERIAL. THE STATE HIGHWAY DEPARTMENT CURRENTLY HAS PROGRAMED AN IMPROVEMENT ON THE REEDVILLE-BEAVERTON SECTION WHICH WOULD RESULT IN A FOUR-LANE MAJOR STREET IMPROVEMENT. THE WORK AS ENVISIONED, BUT YET TO BE PROGRAMED IN THE BEAVERTON-SYLVAN SECTION, WOULD AMOUNT TO MINOR IMPROVEMENT--THE DEVELOPMENT OF CERTAIN CHANNELIZED TRAFFIC CONTROL FEATURES AT CERTAIN KEY INTERSECTIONS AND THE SIGNALIZING OF ADDITIONAL INTERSECTIONS AND THE INTERCONNECTION OF ALL SIGNALS. IT WILL ALSO BE NECESSARY TO PROHIBIT SHOULDER PARKING THROUGHOUT MOST OF THE SECTION.

IT IS EXPECTED THAT BY 1975 THE BEAVERTON-SYLVAN SECTION WILL CARE FOR SOME 15,000 VEHICLES PER DAY; HOWEVER, IN THE FIRST 10-YEAR PERIOD OF THE 20-YEAR PERIOD OF STUDY THESE VOLUMES WILL ALMOST DOUBLE UNTIL THE BEAVERTON-HILLSDALE HIGHWAY, MULTNOMAH EXPRESSWAY, HILLSBORO EXPRESSWAY AND OTHER RELIEF ARTERIALS ARE CONSTRUCTED.

M9 - TUALATIN VALLEY HIGHWAY
REEDVILLE - MULTNOMAH COUNTY LINE

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
REEDVILLE	BEAVERTON	4.76	8,000	4	660,000	- -	660,000	610,000	1,270,000
BEAVERTON	MULTNOMAH COUNTY LINE	3.35	15,000	4	195,000	- -	195,000	- -	195,000
TOTAL		8.10			855,000	- -	855,000	610,000	1,465,000

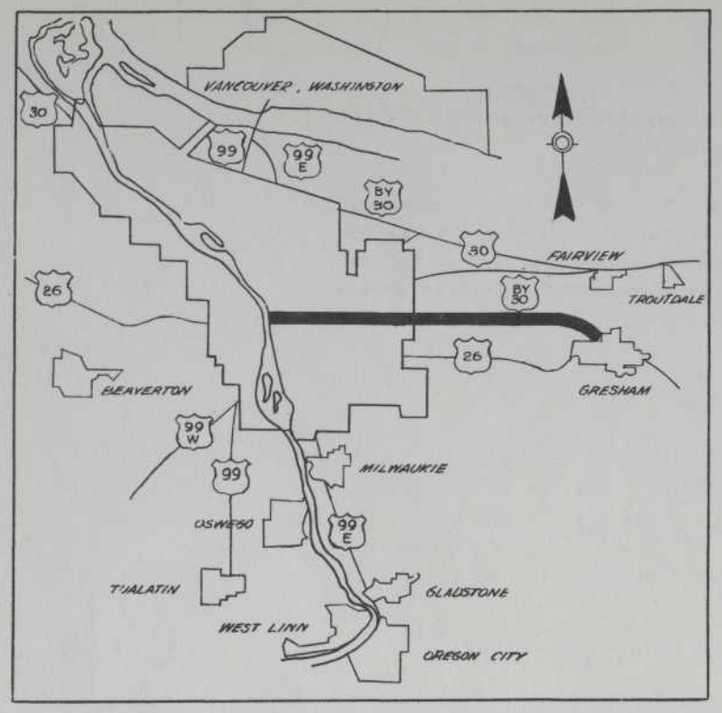


THIS HIGHWAY FACILITY UTILIZES THE EXISTING RIGHTS OF WAY ON 122ND AVENUE.

IT IS EXPECTED THAT BY 1975 THIS FOUR-LANE STREET WILL CARE FOR SOME 20,000 VEHICLES PER DAY BETWEEN THE BANFIELD FREEWAY AND EAST BURNSIDE STREET, WITH THE SOUTHERLY SECTION BETWEEN S.E. DIVISION STREET AND THE MT. HOOD FREEWAY SERVING SOME 8,000 VEHICLES PER DAY IN 1975.

M10 - 122ND AVENUE
SANDY BOULEVARD - JOHNSON CREEK EXPRESSWAY

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
COLUMBIA EXPRESSWAY	BANFIELD FREEWAY	0.80	15,000	4	120,000	- -	120,000	75,000	195,000
BANFIELD FREEWAY	BURNSIDE STREET	1.80	20,000	4	270,000	- -	270,000	600,000	870,000
BURNSIDE STREET	S.E. DIVISION STREET	1.70	15,000	4	250,000	- -	250,000	450,000	650,000
S.E. DIVISION STREET	MT. HOOD FREEWAY	1.60	8,000	4	240,000	- -	240,000	250,000	490,000
TOTAL		5.90			880,000	- -	880,000	1,325,000	2,205,000



THIS PROJECT CALLS FOR THE CREATION OF FOUR LANES OF TRAFFIC THROUGHOUT. SOME OF THE WORK WOULD BE ACCOMPLISHED THROUGH WIDENING OF THE STREET AND OTHER OF THE WORK WOULD BE ACCOMPLISHED THROUGH THE PROHIBITION OF PARKING. IT WOULD BE NECESSARY TO INSTALL TRAFFIC SIGNALS AND DO A NOMINAL AMOUNT OF CHANNELIZATION TO CARE FOR THE SOME 20,000 TO 40,000 VEHICLES PER DAY IN THE PORTION OF THE IMPROVEMENT WEST OF THE CASCADE FREEWAY AS WOULD BE EXPECTED BY 1975.

THE BURNSIDE STREET IMPROVEMENT EAST OF THE CASCADE FREEWAY WOULD UTILIZE THE EXISTING LOCATION OF E. BURNSIDE STREET AND E. BURNSIDE STREET EXTENDED ALONG THE LOCATION OF AN ABANDONED ROUTING OF THE PORTLAND ELECTRIC POWER COMPANY RAILROAD LINE TO GRESHAM. AT THE PRESENT TIME, IMPROVEMENTS ARE BEING MADE ON THE FEDERAL-AID SECONDARY PORTION AT THE EAST END, BUT AS THE RESIDENTIAL AREA IN THE EASTERLY OUTSKIRTS OF THE CORPORATE LIMITS OF PORTLAND CONTINUES TO GROW, IT WILL BECOME INCREASINGLY NECESSARY TO UP-GRADE THE LEVEL OF SERVICE OF THIS ROUTE.

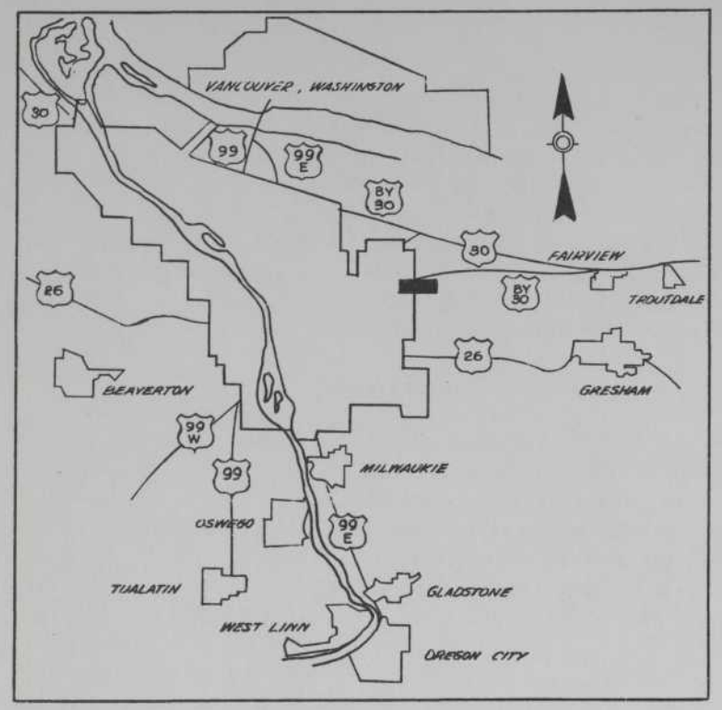
IT WOULD BE POSSIBLE TO BUILD THIS PROJECT TO EXPRESSWAY STANDARDS EAST OF 82ND AVENUE THROUGH CONSTRUCTION OF GRADE SEPARATIONS AT MAJOR CROSS STREETS. IT IS UNDERSTOOD THAT MULTNOMAH COUNTY PRESENTLY PLANS TO ACQUIRE SUFFICIENT RIGHTS OF WAY TO ACCOMPLISH EXPRESSWAY STANDARDS OF CONSTRUCTION.

IT IS EXPECTED THAT BETWEEN 82ND AVENUE AND 122ND AVENUE SOME 20,000 VEHICLES PER DAY BY 1975 WILL DESIRE TO USE THIS ROUTE. BETWEEN 122ND AVENUE AND 162ND AVENUE, 12,000 VEHICLES PER DAY WILL DEMAND SERVICE FROM THIS FACILITY; WHILE IN THE PORTION BETWEEN 162ND AVENUE AND GRESHAM ROAD 9,000 VEHICLES PER DAY WILL REQUIRE THE USE OF THIS FACILITY. THESE TRIPS WILL BE PREDOMINATELY HOME-TO-WORK AND INTERCHANGE OF TRIPS BETWEEN NEIGHBORHOODS; HOWEVER, THE DEMANDS ON THIS FACILITY ON WEEKENDS WILL BE CONSIDERABLE DURING THE PERIOD OF RECREATIONAL TRAVEL TO THE MT. HOOD RECREATIONAL AREA.

HERE AGAIN, IT SHOULD BE BORNE IN MIND THAT UNTIL SUCH TIME AS THE FREMONT FREEWAY, THE MT. HOOD FREEWAY AND OTHER RELIEF ROUTES ARE DEVELOPED FOR THE BANFIELD FREEWAY, THIS STREET MAY CARRY VOLUMES CONSIDERABLY IN EXCESS OF THOSE PREDICTED FOR 1975, ESPECIALLY DURING THE FIRST 10-YEAR PERIOD OF THE STUDY.

M11 - EAST BURNSIDE STREET
UNION AVENUE - GRESHAM ROAD

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
UNION AVENUE	20TH AVENUE	0.79	40,000	4	10,000	- -	10,000	- -	10,000
20TH AVENUE	LAURELHURST FREEWAY	1.15	30,000	4	20,000	- -	20,000	- -	20,000
LAURELHURST FREEWAY	STARK STREET	1.38	25,000	4	20,000	- -	20,000	- -	20,000
STARK STREET	CASCADE FREEWAY	0.71	25,000	4	45,000	- -	45,000	- -	45,000
CASCADE FREEWAY	122ND AVENUE	2.00	20,000	4	500,000	- -	500,000	200,000	700,000
122ND AVENUE	162ND AVENUE	2.00	12,000	4	400,000	- -	400,000	200,000	600,000
162ND AVENUE	FAIRVIEW AVENUE	3.20	9,000	4	650,000	- -	650,000	250,000	900,000
TOTAL		11.23			1,645,000	- -	1,645,000	650,000	2,295,000



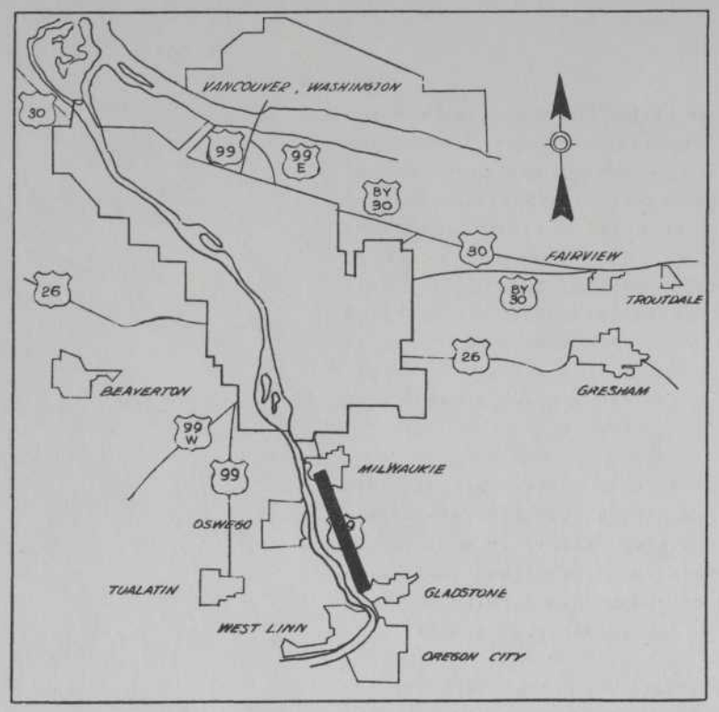
THIS IMPROVEMENT CALLS FOR THE ESTABLISHMENT OF A ONE-WAY COUPLET, UTILIZING HALSEY STREET AND WEIDLER STREET, BETWEEN 103RD AVENUE AND 112TH AVENUE AND WIDENING HALSEY STREET BETWEEN THE BANFIELD FREEWAY AND 103RD AVENUE AS WELL AS BETWEEN 112TH AVENUE AND 122ND AVENUE SO AS TO CARE FOR AN ORDERLY MOVEMENT OF TRAFFIC THROUGH THIS VERY RAPIDLY GROWING RESIDENTIAL AND SHOPPING AREA. IMPROVEMENTS IN THE VICINITY OF 102ND AVENUE ARE DICTATED AT A VERY EARLY DATE TO CARE FOR THE EXCESSIVE DEMANDS UPON ALL OF THE LOCAL SERVICE STREETS TO ACCOMMODATE SHOPPER AND HOME-TO-WORK TRIPS.

IT IS EXPECTED THAT THIS HIGHWAY WILL BE USED BY SOME 10,000 VEHICLES PER DAY IN 1975; HOWEVER, PENDING COMPLETION OF OTHER FLANKING FACILITIES THIS VOLUME WILL BE EXCEEDED AND CERTAIN SHORT SECTIONS, ESPECIALLY THAT SECTION TO THE WEST OF 102ND AVENUE, WILL NO DOUBT REACH VOLUMES OF 15,000 TO 20,000 VEHICLES PER DAY.

IT WOULD BE DESIRABLE TO EXTEND THIS PROJECT EASTERLY TO TROUTDALE AND CONNECT GLISAN STREET TO HALSEY STREET AT ARATA ROAD, BUT ESTIMATES OF COST FOR SUCH WORK WERE NOT AVAILABLE FOR INCLUSION IN THIS REPORT.

M12 - HALSEY STREET
BANFIELD FREEWAY - 122ND AVENUE

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
BANFIELD FREEWAY	N.E. 122ND AVENUE	1.35	16,000	4	415,000	- -	415,000	900,000	1,315,000
TOTAL		1.35			415,000	- -	415,000	900,000	1,315,000

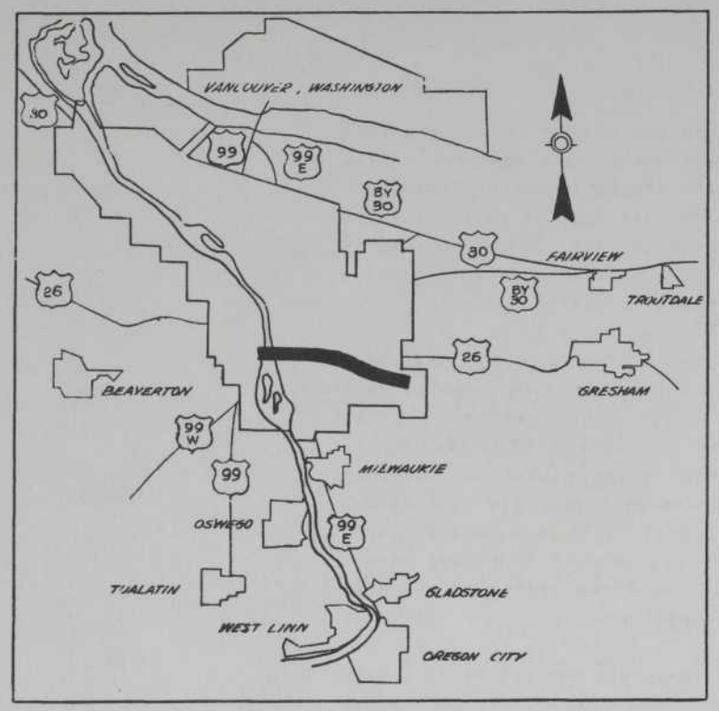


THIS PROJECT RECOGNIZES THE NEED TO IMPROVE CERTAIN STRATEGIC INTERSECTIONS ALONG THE PRESENT LOCATION OF THE PACIFIC HIGHWAY EAST, US99E, SO AS TO INCREASE THE CARRYING CAPACITY OF THIS IMPORTANT KEY HIGHWAY. THE IMPROVEMENT WOULD BE ACCOMPLISHED THROUGH THE INSTALLATION OF A NOMINAL NUMBER OF ADDITIONAL TRAFFIC SIGNALS, CHANNELIZING CERTAIN CRITICAL INTERSECTIONS, AND INTERCONNECTING SIGNALS EITHER THROUGH ACTUAL PHYSICAL INTERCONNECTION OF THE SIGNALS OR THE INSTALLATION OF VOLUME DENSITY TRAFFIC SIGNAL CONTROL SO THAT PROGRESSION MAY BE ACCOMPLISHED.

THE 1975 TRAFFIC VOLUMES ON THIS SECTION OF HIGHWAY ARE ESTIMATED TO BE APPROXIMATELY 20,000 VEHICLES PER DAY BUT IN THE PERIOD PRECEDING CONSTRUCTION OF PARALLELING EXPRESSWAY AND FREEWAY FACILITIES, TRAFFIC VOLUMES IN THIS SECTION CAN BE EXPECTED TO REACH 30,000 TO 35,000 VEHICLES PER DAY.

M13 - MCLOUGHLIN BOULEVARD
MILWAUKIE - GLADSTONE

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
MILWAUKIE	LAURELHURST FREEWAY	2.15	20,000	4	80,000	- -	80,000	- -	80,000
LAURELHURST FREEWAY	GLADSTONE	3.05	20,000	4	120,000	- -	120,000	- -	120,000
TOTAL		5.20			200,000	- -	200,000	- -	200,000

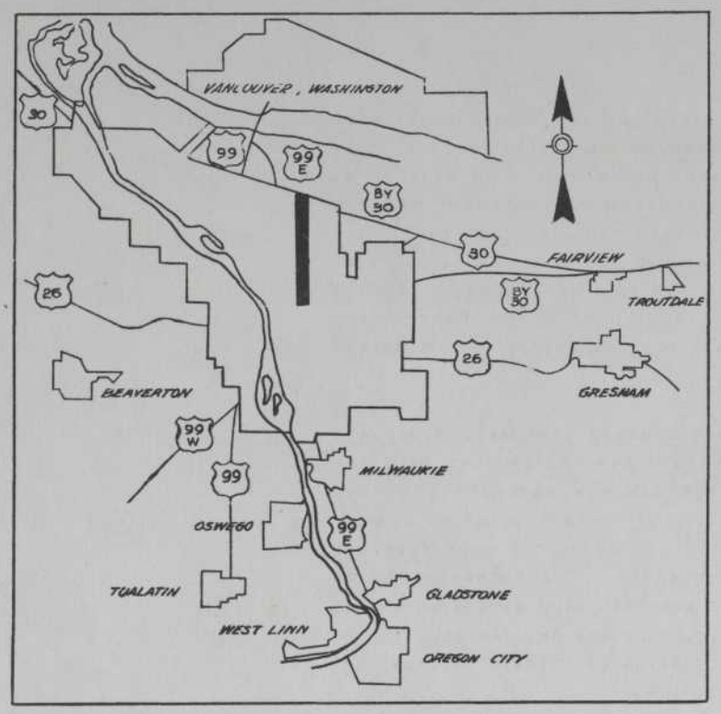


THIS PROJECT CALLS FOR THE RECONSTRUCTION OF THE ROSS ISLAND BRIDGE THROUGH THE REMOVAL OF THE SIDEWALK ON THE SOUTHERLY SIDE AND WIDENING TO DEVELOP 42 FT. OF ROADWAY THUS INCREASING THE CAPACITY OF THIS BRIDGE TO SOME 40,000 VEHICLES PER DAY. THE 1975 ANTICIPATED TRAFFIC IS SOME 45,000 VEHICLES PER DAY. PRIOR TO THE CONSTRUCTION OF THE MT. HOOD-SUNSET FREEWAY BRIDGE CONNECTION, TRAFFIC VOLUMES ON THE ROSS ISLAND BRIDGE MAY EVEN REACH A FIGURE IN EXCESS OF THE 45,000 VEHICLES PER DAY.

THE OTHER IMPROVEMENTS ON POWELL BOULEVARD BETWEEN MCLOUGHLIN BOULEVARD AND FOSTER ROAD CALL FOR THE SIGNALIZATION OF CERTAIN KEY INTERSECTIONS AND WIDENING OR THE PROHIBITION OF PARKING SO AS TO DEVELOP FOUR LANES OF TRAFFIC, WHICHEVER IS THE MORE FEASIBLE AS THE PROJECT IS ACCOMPLISHED. THE IMPROVEMENTS ON FOSTER ROAD, WHICH IT IS EXPECTED WILL HAVE SOME 25,000 VEHICLES PER DAY USING IT, CALL FOR THE INSTALLATION OF A RAISED MEDIAN, CHANNELIZATION OF CERTAIN CRITICAL INTERSECTIONS AND SIGNALIZATION.

M14 - POWELL BOULEVARD - FOSTER ROAD
PORTLAND-SALEM FREEWAY - 82ND AVENUE

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
PORTLAND-SALEM FREEWAY	CASCADE FREEWAY	4.80	30,000	4	100,000	400,000	500,000	- -	500,000
TOTAL		4.80			100,000	400,000	500,000	- -	500,000



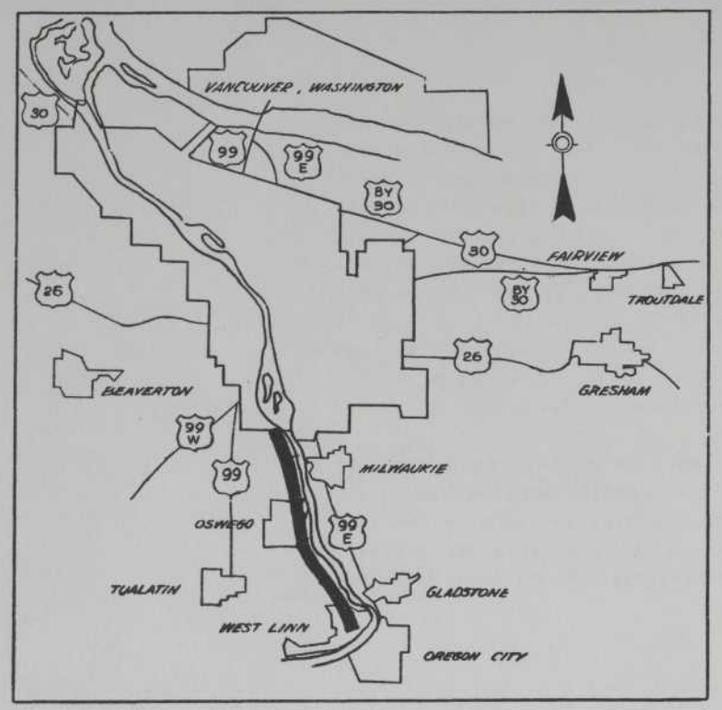
THIS ONE-WAY COUPLET SERVES AS AN EXTENSION OF THE EASTSIDE EXPRESSWAY AND GIVES A COMPLETE NORTH-SOUTH ARTERIAL FROM LOMBARD STREET TO MCLOUGHLIN BOULEVARD. THE WORK REQUIRED ON THIS COUPLET IS THE IMPROVEMENT OF THE PRESENT WEARING SURFACE, THE EXTENSION OF CERTAIN STREETS AND THE INSTALLATION OF TRAFFIC SIGNALS TO CONTROL AN ORDERLY MOVEMENT OF TRAFFIC.

IT IS POSSIBLE THAT FUTURE STUDY IN THE IMPLEMENTATION OF THE OVER-ALL 20-YEAR PROGRAM MIGHT DICTATE THAT THE LAURELHURST FREEWAY COULD BETTER BE CONSTRUCTED ON A LOCATION APPROXIMATING 30TH AVENUE. IF SUCH SHOULD BE DETERMINED IN THE FINAL ANALYSIS, IT MIGHT NOT BE NECESSARY TO IMPROVE THE 15TH-16TH AVENUE ONE-WAY COUPLET BEYOND PRESCOTT OR KILLINGSWORTH STREET. THE SOUTHERLY PORTION OF THIS COUPLET IS A VERY IMPORTANT LINK TO THE EAST SIDE SHOPPING CENTER AS WOULD BE DEVELOPED BY THE LLOYD CORPORATION.

IT IS EXPECTED THAT THIS COUPLET BY 1975 WILL SERVICE SOME 25,000 VEHICLES PER DAY IN THE AREA NORTH OF THE FREMONT FREEWAY AND 35,000 VEHICLES PER DAY SOUTH THEREOF.

M15 - 15TH-16TH AVENUE ONE-WAY COUPLET
LOMBARD STREET - MULTNOMAH STREET

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
N.E. LOMBARD STREET	FREMONT FREEWAY	2.02	20,000	4	720,000	- -	720,000	500,000	1,220,000
FREMONT FREEWAY	EASTSIDE EXPRESSWAY	1.08	35,000	4	390,000	- -	390,000	- -	390,000
TOTAL		3.10			1,110,000	- -	1,110,000	500,000	1,610,000



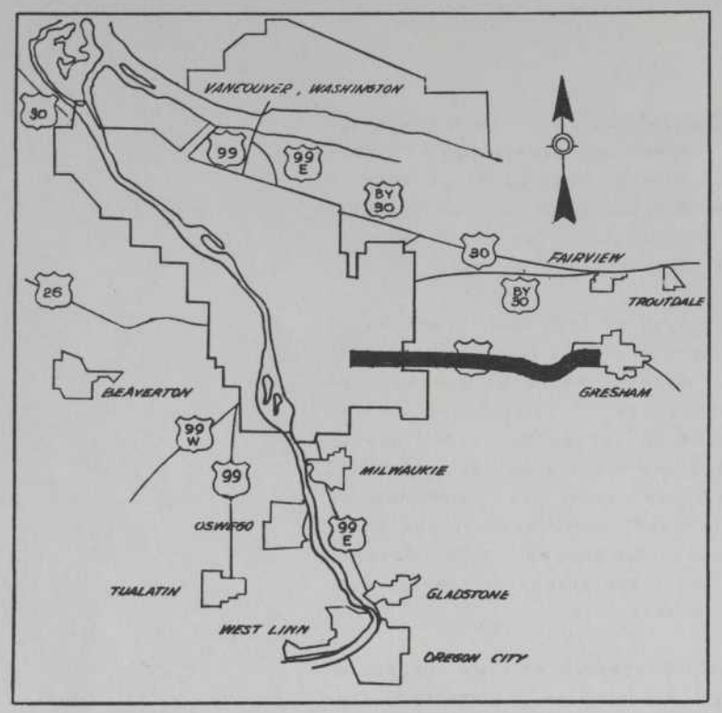
THE OSWEGO HIGHWAY CALLS FOR THE RECONSTRUCTION BETWEEN SELLWOOD FREEWAY AND LAURELHURST FREEWAY FROM ITS PRESENT THREE LANES TO FOUR LANES OF TRAFFIC WITH A RAISED MEDIAN, NO PARKING THROUGHOUT MOST OF ITS LENGTH, AND THE ADEQUATE CHANNELIZATION AND SIGNALIZATION OF MAJOR INTERSECTING STREETS AND ROADS.

IT IS EXPECTED THAT BY 1975 SOME 15,000 VEHICLES PER DAY WOULD USE SUCH HIGHWAY. THE NORMAL GROWTH OF THE EXISTING OSWEGO HIGHWAY WOULD BE SOMEWHAT IN EXCESS OF THIS VOLUME BUT THE CONSTRUCTION OF THE LAURELHURST FREEWAY JUST TO THE SOUTH OF THE OSWEGO CENTRAL BUSINESS DISTRICT AND THE NEW BRIDGE ACROSS THE WILLAMETTE RIVER AT THIS POINT CONNECTING TO MCLOUGHLIN BOULEVARD-OATFIELD EXPRESSWAY, WOULD RELIEVE THE TRAFFIC DEMANDS ON THE OSWEGO EXPRESSWAY. THE TRAFFIC VOLUMES UTILIZING THIS ROUTE ARE PRIMARILY HOME-TO-WORK AND RECREATIONAL TRIPS IN CHARACTER.

THE LAURELHURST FREEWAY-WEST LINN PORTION OF THIS PROJECT WOULD BE THE WIDENING OF THE PRESENT HIGHWAY TO FOUR LANES AND OTHER INCIDENTAL IMPROVEMENT SUCH AS CHANNELIZATION AT CRITICAL LOCATIONS. IT IS EXPECTED BY 1975 THAT SOME 7,000 VEHICLES PER DAY WILL USE THIS HIGHWAY; HOWEVER UNTIL SUCH TIME AS THE CASCADE FREEWAY IS CONSTRUCTED TRAFFIC VOLUMES WILL BE CONSIDERABLY HIGHER ON THIS LOCATION.

M16 - OSWEGO HIGHWAY (ORE43)
SELLWOOD BRIDGE - WEST LINN

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
LAURELHURST FREEWAY	WEST LINN	3.90	7,000	4	660,000	- -	660,000	150,000	810,000
SELLWOOD BRIDGE	LAURELHURST FREEWAY	4.00	15,000	4	1,000,000	500,000	1,500,000	750,000	2,250,000
TOTAL		7.90			1,660,000	500,000	2,160,000	900,000	3,060,000

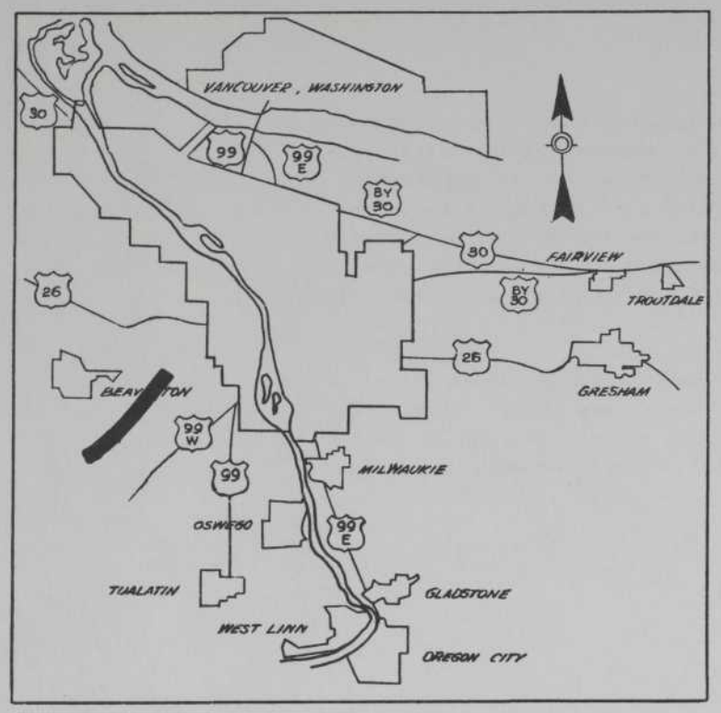


IT IS FELT THAT THIS HIGHWAY, NOTWITHSTANDING THE IMPROVEMENT OF THE MT. HOOD FREEWAY SHOULD BE IMPROVED TO FOUR LANES, AT LEAST TO 122ND AVENUE SO AS TO ADEQUATELY CONNECT THE RESIDENTIAL AREA SERVICED BY THIS STREET WITH THE MT. HOOD FREEWAY AND THE CASCADE FREEWAY. IT IS EXPECTED THAT BY 1975 TRAFFIC VOLUMES WILL AMOUNT TO SOME 20,000 VEHICLES PER DAY ON THIS ARTERIAL. IN THE EVENT THAT THE EASTERLY PORTION OF THE MT. HOOD FREEWAY EAST OF 82ND AVENUE IS NOT IMPROVED AT A REASONABLY EARLY DATE, IT MIGHT BE NECESSARY TO EXTEND THIS IMPROVEMENT EASTERLY.

THE EASTERLY PORTION OF THIS FOUR-LANE IMPROVEMENT BETWEEN LINNEMAN JUNCTION AND GRESHAM IS EXPECTED TO CARRY SOME 15,000 VEHICLES PER DAY BY 1975 AND IS THE DIRECT CONNECTING LINK BETWEEN THE TERMINAL POINT OF THE MT. HOOD FREEWAY AND THE CITY OF GRESHAM.

M17 - POWELL VALLEY ROAD
82ND AVENUE - GRESHAM

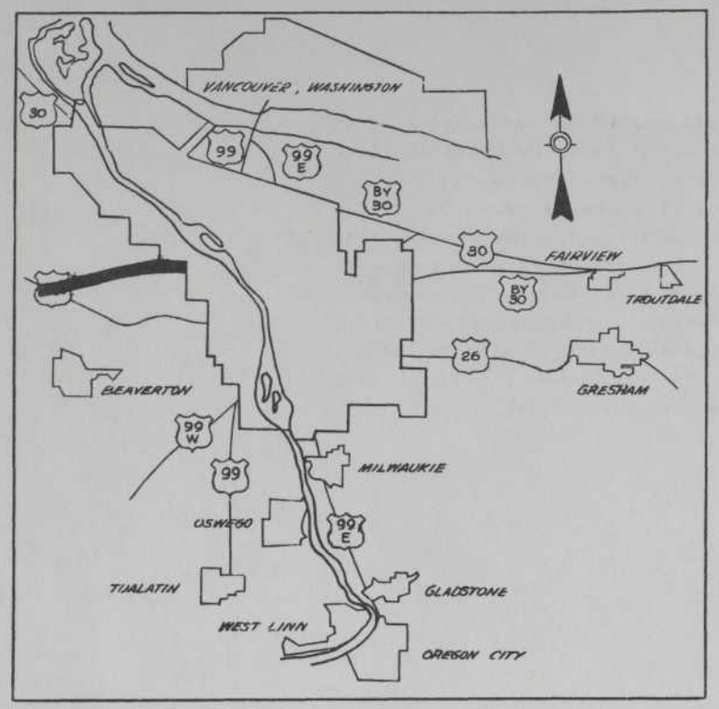
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
CASCADE FREEWAY	122ND AVENUE	2.00	20,000	4	360,000	- -	360,000	140,000	500,000
122ND AVENUE	LINNEMAN JUNCTION			No	IMPROVEMENT				
LINNEMAN JUNCTION	GRESHAM	2.10	15,000	4	330,000	- -	330,000	150,000	480,000
TOTAL		4.10			690,000	- -	690,000	290,000	980,000



THIS HIGHWAY HAS HAD A VERY RAPID INCREASE IN ITS TRAFFIC VOLUMES DURING THE PAST FEW YEARS AND WITH THE RAPID GROWTH OF RESIDENTIAL DEVELOPMENT THAT IS TAKING PLACE IN THIS AREA, IT IS EXPECTED THAT THIS WILL BECOME AN IMPORTANT ARTERIAL SERVING HOME-TO-WORK AND NEIGHBORHOOD TRIPS. THE IMPROVEMENT CALLS FOR THE CONSTRUCTION OF FOUR LANES WITH CERTAIN KEY IMPROVEMENTS BEING MADE AT STRATEGIC INTERSECTIONS, SPECIFICALLY AT THE RALEIGH HILLS INTERSECTION WITH THE BEAVERTON-HILLSDALE HIGHWAY, THE MULTNOMAH EXPRESSWAY AND WITH THE CEDAR HILLS-TUALATIN EXPRESSWAY.

M18 - SCHOLLS FERRY HIGHWAY
RALEIGH HILLS - PROGRESS

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
BEAVERTON-HILLSDALE HIGHWAY	MULTNOMAH EXPRESSWAY	1.70	10,000	4	250,000	50,000	300,000	140,000	440,000
MULTNOMAH EXPRESSWAY	CEDAR HILLS-TUALATIN EXPRESSWAY	1.80	8,000	4	270,000	- -	270,000	150,000	420,000
TOTAL		3.50			520,000	50,000	570,000	390,000	860,000

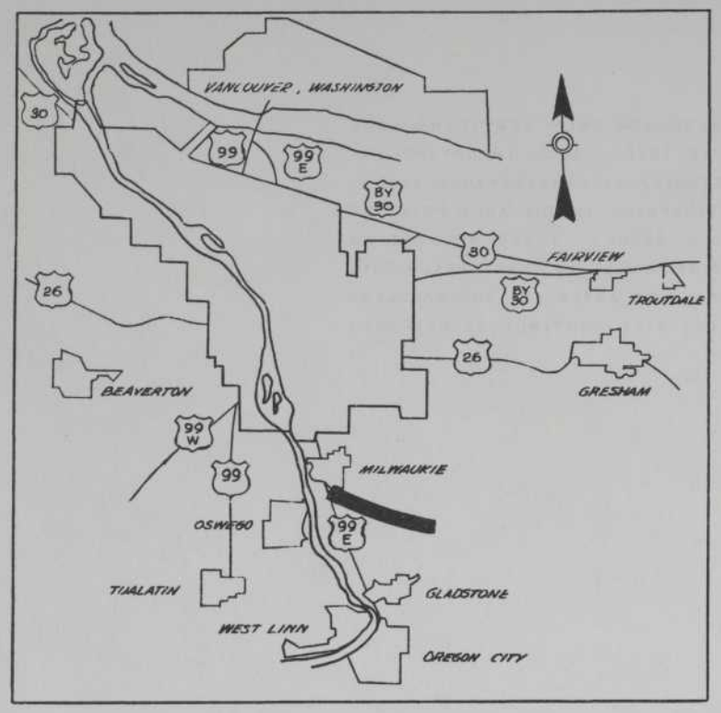


IT IS PLANNED TO IMPROVE THE PRESENT LOCATION OF CORNELL ROAD BOTH AS TO ALIGNMENT AND GRADIENT WHEN THIS FOUR-LANE MAJOR STREET PROJECT IS CONSUMMATED. THE EASTERLY PORTION OF THIS PROJECT UTILIZES ONE-WAY STREET ROUTING ON N.W. RALEIGH AND SAVIER STREETS WHICH WILL AFFORD DIRECT CONNECTION TO THE STADIUM AND INDUSTRIAL FREEWAYS AND THE N.W. 18TH-19TH AVENUE ONE-WAY COUPLET.

THIS ARTERIAL WILL AFFORD A CERTAIN AMOUNT OF RELIEF FOR THE SUNSET FREEWAY AND THE BARNES ROAD EXPRESSWAY, AS IT WILL ALLOW TRAFFIC FROM THE HILLSBORO AND SUNSET HIGHWAY AREAS EAST OF CEDAR MILL TO USE THIS MAJOR STREET.

M19 - CORNELL ROAD
SUNSET FREEWAY - STADIUM FREEWAY

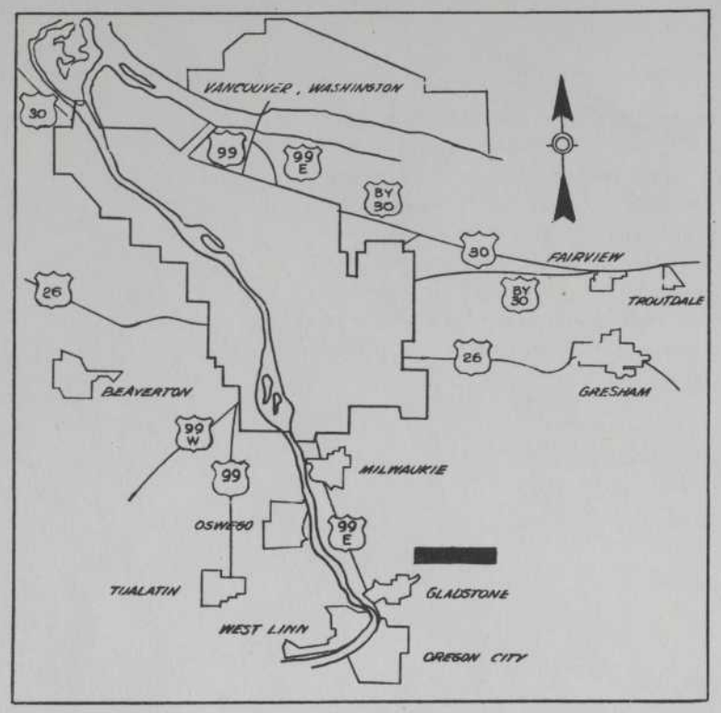
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
SUNSET FREEWAY	SKYLINE BOULEVARD	4.30	5,000	4	750,000	- -	750,000	350,000	1,100,000
SKYLINE BOULEVARD	STADIUM FREEWAY	2.84	10,000	4	650,000	600,000	1,250,000	150,000	1,400,000
TOTAL		7.14			1,400,000	600,000	2,000,000	500,000	2,500,000



M20 - LAKE ROAD
LAURELHURST FREEWAY - CASCADE FREEWAY

THE IMPROVEMENT OF LAKE ROAD, WHICH IS A PART OF THE CLACKAMAS HIGHWAY, IS FELT NECESSARY SO THAT NOT ONLY RESIDENTIAL TRAFFIC BUT COMMERCIAL AND INDUSTRIAL TRAFFIC FROM BOTH EASTERN CLACKAMAS COUNTY AND THE PROPOSED INDUSTRIAL DEVELOPMENT IN THE CLACKAMAS AREA WOULD BE AFFORDED A CONNECTION BETWEEN 82ND AVENUE AND THE LAURELHURST FREEWAY AND ON INTO THE CITY OF MILWAUKIE. IT IS EXPECTED THAT SOME 5,000 VEHICLES PER DAY WOULD USE THIS FOUR-LANE MAJOR STREET BY 1975.

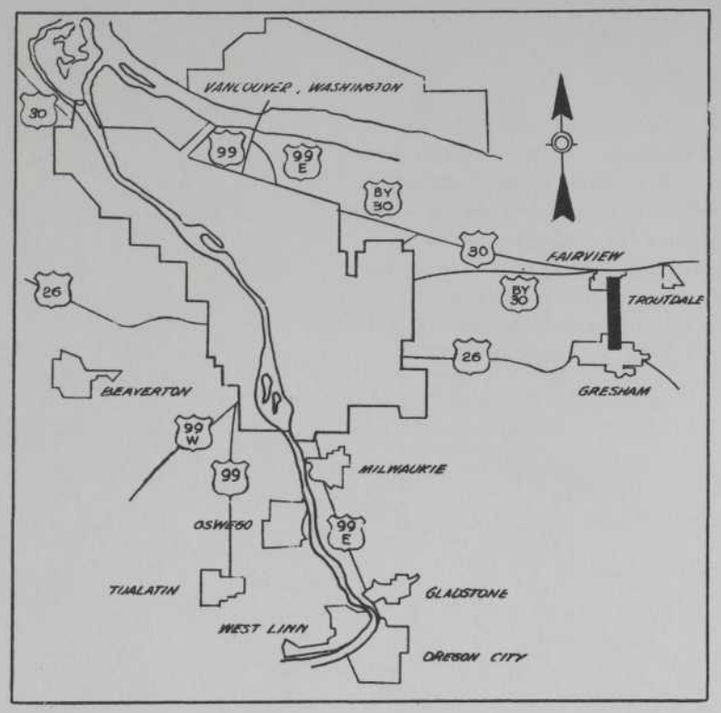
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
LAURELHURST FREEWAY	CASCADE FREEWAY	2.35	10,000	4	350,000	-	350,000	125,000	475,000
TOTAL		2.35			350,000	- -	350,000	125,000	475,000



THIS ROUTE, ALTHOUGH ONLY SERVICING SOME 4,000 VEHICLES PER DAY BY 1975, IS AN IMPORTANT IMPROVEMENT AS THERE IS ANTICIPATED CONSIDERABLE INDUSTRIAL AND WAREHOUSING DEVELOPMENT IN THE AREA ADJACENT TO RAIL FACILITIES. AS A RESULT, THERE WILL BE AN INCREASE IN RESIDENTIAL DEVELOPMENT IN THIS AREA. THIS HIGHWAY IS ALREADY AN IMPORTANT ARTERY IN THE HANDLING OF LOG TRUCK TRAFFIC WHICH WILL CONTINUE TO USE SUCH FACILITY.

M21 - CLACKAMAS HIGHWAY
CLACKAMAS CUTOFF - CARVER

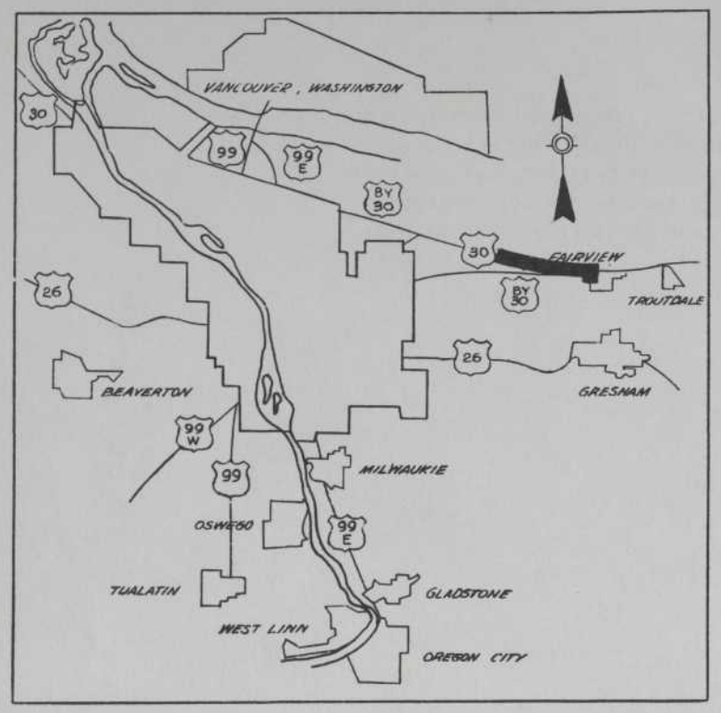
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
CLACKAMAS	CARVER	2.55	4,000	4	400,000	50,000	450,000	125,000	575,000
TOTAL		2.55			400,000	50,000	450,000	125,000	575,000



THIS IMPROVEMENT COMPLETES THE MOST EASTERLY NORTH-SOUTH ARTERIAL STUDIED IN THIS REPORT. IT CONNECTS THE BANFIELD FREEWAY WITH EAST BURNSIDE STREET IN GRESHAM AND IT IS EXPECTED THAT SOME 4,000 VEHICLES PER DAY WOULD USE SUCH FOUR-LANE CROSS-CONNECTING HIGHWAY.

M22 - GRESHAM ROAD
FAIRVIEW - GRESHAM

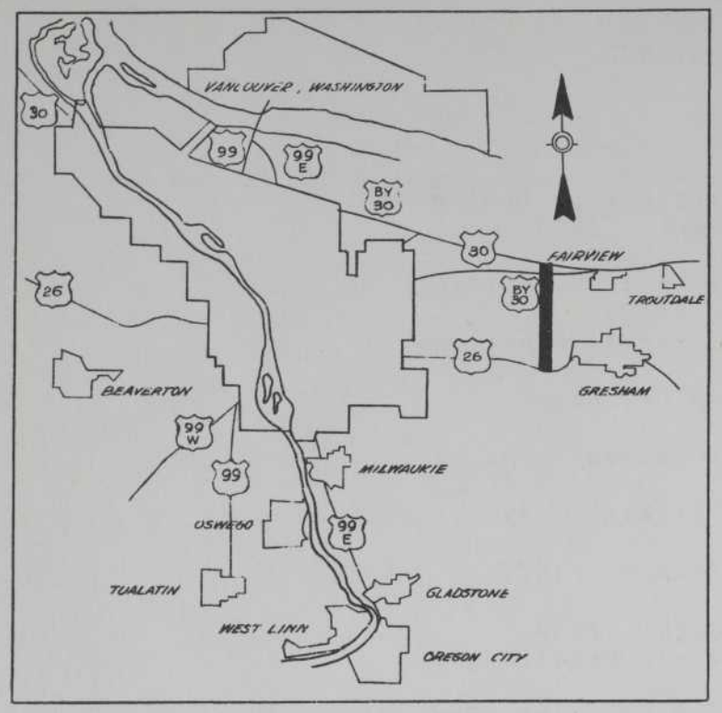
SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
FAIRVIEW	GRESHAM	3.40	4,000	4	555,000	- -	555,000	175,000	730,000
TOTAL		3.40			555,000	- -	555,000	175,000	730,000



THIS IMPROVEMENT IS BROUGHT ABOUT THROUGH THE ANTICIPATED INDUSTRIAL DEVELOPMENT BETWEEN THE BANFIELD FREEWAY, SANDY BOULEVARD, 122ND AVENUE AND 162ND AVENUE, AND OTHER INDUSTRIAL IMPROVEMENTS NORTH OF THE UNION PACIFIC FREIGHT LINE WHICH PARALLELS SANDY BOULEVARD THROUGHOUT MOST OF ITS DISTANCE. THIS PROJECT WOULD AMOUNT TO WIDENING THE PRESENT THREE-LANE HIGHWAY TO FOUR LANES AND IT IS FELT THAT SOME 6,000 TO 8,000 VEHICLES PER DAY WOULD USE THIS FACILITY IN 1975.

M23 - SANDY BOULEVARD
122ND AVENUE - FAIRVIEW

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
122ND AVENUE	N.E. 162ND AVENUE	2.10	8,000	4	325,000	- -	325,000	20,000	345,000
N.E. 162ND AVENUE	FAIRVIEW	3.10	6,000	4	475,000	- -	475,000	30,000	505,000
TOTAL		5.20			800,000	- -	800,000	50,000	850,000



THIS IMPROVEMENT IS A NORTH-SOUTH ARTERIAL BISECTING THE RAPIDLY GROWING EAST SIDE RESIDENTIAL AREA AND SERVES AS A CONNECTION BETWEEN SANDY BOULEVARD, EAST BURNSIDE STREET, DIVISION STREET AND POWELL BOULEVARD AND THUS ACTS NOT ONLY AS A CONNECTOR STREET BUT AS A DISTRIBUTOR AS WELL. TRAFFIC VOLUMES OF APPROXIMATELY 5,000 VEHICLES PER DAY ARE EXPECTED TO USE THIS ROAD.

M24 - 162ND AVENUE
SANDY BOULEVARD - POWELL VALLEY ROAD

SECTION					COST				
FROM	TO	LENGTH (MILES)	TRAFFIC (1975) (ADT)	LANES No.	GRADING & PAVING ($)	STRUCTURES ($)	CONSTR. ($)	R/W ($)	TOTAL ($)
N.E. SANDY BOULEVARD	BURNSIDE STREET	1.95	5,000	4	320,000	- -	320,000	120,000	440,000
BURNSIDE STREET	POWELL VALLEY ROAD	1.90	5,000	4	335,000	- -	335,000	125,000	460,000
TOTAL		3.85			655,000	- -	655,000	145,000	900,000

PUBLICATIONS OF THE OREGON STATE HIGHWAY COMMISSION

TECHNICAL BULLETINS

No. 1 *Loading Tests on a New Composite-type Short-span Highway Bridge Combining Concrete and Timber in Flexure, by Baldock and McCullough. 1933. (Revised May, 1941).*

*No. 2** *Application of Freyssinet Method of Concrete Arch Construction to the Rogue River Bridge in Oregon by Gemeny and McCullough. 1933.*

*No. 3** *Loading Tests on Steel Deck Plate Girder Bridge with Integral Concrete Floor, by Paxson. 1934.*

*No. 4** *Design of Waterway Areas for Bridges and Culverts, by McCullough. 1934.*

*No. 5** *The Effect of Highway Design on Vehicle Speed and Fuel Consumption, by Beakey. 1937.*

No. 6 *The Effect of Heavy Motor Transport on Highway Bridge Stresses, by McCullough and Paxson. 1937.*

No. 7 *The Economics of Highway Planning, by McCullough and Beakey. 1937. (Revised September, 1938).*

No. 8 *Determination of Highway System Solvencies, by McCullough. 1937.*

No. 9 *The Merit System for Engineering Personnel, by Baldock and McCullough. 1938.*

*No. 10** *An Analysis of the Highway Tax Structure in Oregon, by McCullough, Beakey, and Van Scoy. 1938.*

No. 11 *An Economic Analysis of Short-span Suspension Bridges for Modern Highway Loadings, by McCullough, Paxson and Smith. 1938.*

No. 12 *Light-reflecting Characteristics of Pavement Surfaces, by Paxson and Everson. 1939.*

No. 13 *Rational Design Methods for Short-span Suspension Bridges for Modern Highway Loadings, by McCullough, Paxson, and Smith. 1940.*

*No. 14** *The Derivation of Design Constants for Suspension Bridge Analysis, by McCullough, Paxson and Smith. 1940.*

No. 15 *The Experimental Verification of Theory for Suspension Bridge Analysis, by McCullough, Paxson and Rosecrans. 1942.*

No. 16 *Trans-Columbia River Interstate Bridge Studies, a Joint Report, by the Washington Department of Highways and the Oregon State Highway Department. 1944.*

No. 17 *The Effect of Surface Type, Alignment, and Traffic Congestion of Vehicular Fuel Consumption, by Beakey, Crandall, Klein, and Head. 1944.*

No. 18 *Multiple-span Suspension Bridges, Development and Experimental Verification of Theories, by McCullough, Paxson and Rosecrans. 1944.*

No. 19 *Manual of Instructions for Construction Department Employees, by Smith and Libby. 1946.*

No. 20 *Standard Highway Spirals, by Libby. 1949.*

No. 21 *Highway Guard Fence, by Finkbiner. 1950.*

No. 22 *Sign Legability Study, by Traffic Engineering Division. 1954.*

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* *Supply Exhausted*

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Report of the Interim Committee appointed to study the Motor Transportation Act, by the Interim Committee. 1937.

No. 38-1 *An Inventory of City Streets in Oregon, by Beakey, Van Scoy, and Walton. 1938.*
No. 38-1A *Addenda to an Inventory of City Streets in Oregon, by Beakey, Van Scoy, and Walton. 1938.*
No. 38-2 *Rural Road Inventory of the State-wide Highway Planning Survey, by Beakey, Van Scoy, and Walton. 1938.*
No. 38-3 *Motor Vehicle Allocation and Road Use Surveys of the State-wide Highway Planning Survey, by Beakey, Van Scoy and Myers. 1938.*
No. 38-4 *Fiscal Survey of the State-wide Highway Planning Survey, by Beakey, Van Scoy, and Keef. 1938.*
No. 38-5 *Rural Traffic Survey of the State-wide Highway Planning Survey, by Beakey, Glenn, and Manning. 1938.*
No. 38-5A* *Annual Daily Traffic Density Tables of the Rural Traffic Survey, State-wide Highway Planning Survey (report accompanied by traffic station maps--price $5.00), by Beakey, Glenn, and Manning. 1938.*
No. 38-6 *Urban Traffic Survey (part I and part II), by Beakey, Glenn, and Manning. 1938.*
No. 39-1 *Data Supplementary to Interim Committee Report of January 1, 1937, by Beakey and Myers. 1939.*
No. 39-2 *A State-wide Survey of Aggregates, by Finkbiner, 1939.*
No. 39-3* *Notes on the Application of Soil Mechanics to Highway Excavations and Embankments, by Paxson and Smith. 1939.*
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No. 39-6* *Record of Road Costs and Earnings on the Oregon State Highway System for the Calendar Year 1937, by Probert and Bonnett. 1939.*
No. 40-1 *Traffic Density Tables for 1940, by Beakey and Manning. 1940.*
No. 40-2 *A Study of Expansion Joint Behavior in a Typical Western Oregon Pavement, by McCullough, Smith, and Webber. 1940.*
No. 40-3 *Data Supplementary to Interim Committee Report of January 1, 1937, by Baldock, Beakey, and Myers. 1941.*
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No. 42-1 *Traffic Density Tables for 1941, by Beakey and Manning. 1942.*
No. 42-2 *Data Supplementary to Technical Bulletin No. 10, by McCullough and Myers. 1942.*
No. 42-3 *The Fees and Taxes Paid by the Road Users for the Highway Facilities Provided, by Baldock and McCullough. 1942.*
No. 43-1 *Manual of Standard Practice for Paving Inspectors, by Finkbiner and O'Neil. 1943.*
No. 43-2 *Manual of Standard Practice for Sampling Construction Materials, by Finkbiner. 1943.*
No. 43-3 *Traffic Density Tables for 1942, by Crandall and Stein. 1943.*
No. 43-4 *The Geometric Design of Highway Alignments and Highway Intersections, by Baldock. 1943.*
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No. 44-2 *Effect of Expansion Joint Spacing in Typical Concrete Pavements of Western Oregon, by Paxson and Richards. 1944.*
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No. 44-4 *Log Scale Measurements vs. Weight as a Measure for Load Regulations, by Paxson and Spaulding. 1944.*
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No. 48-1 *Traffic Density Tables for 1947, by Crandall and Stein. 1948.*
No. 48-2 *Motor Vehicle Traffic Accident Analysis Coding Manual, by Crandall, Head, and Taylor. 1948.*
No. 49-1 *Traffic Density Tables for 1948, by Crandall and Manning. 1949.*
No. 49-2 *1946 Portland Metropolitan Area Traffic Survey O-D Study. 1949.*
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No. 51-1 *Traffic Volume Tables for 1950, by Crandall and Gately. 1951.*
No. 51-2 *1949 Traffic Accidents and Accident Rates, by Crandall, Johnson, and Taylor. 1951.*
No. 52-1 *Traffic Volume Tables for 1951, by Crandall and Gately. 1952.*
No. 52-2 *1950 Traffic Accidents and Accident Rates, by Crandall, Johnson, and Taylor. 1952*
No. 52-3* *Eugene-Springfield Area Origin-Destination Study and Route Analysis. October, 1952.*
No. 52-4 *Eugene Parking Study. October, 1952.*
No. 53-1 *Traffic Volume Tables for 1952, by Traffic Engineering Division, Planning Survey Section. July, 1953.*
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No. 54-1* *Traffic Volume Tables for 1953, by Traffic Engineering Division, Planning Survey Section. May, 1954.*
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No. 55-1 *Traffic Volume Tables for 1954, by Traffic Engineering Division, Planning Survey Section.*
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No. 55-4 *Traffic Survey Roseburg and Vicinity, 1954, by Traffic Engineering Division. February, 1955.*
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